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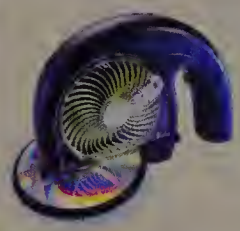

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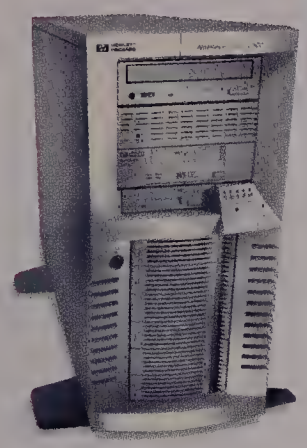

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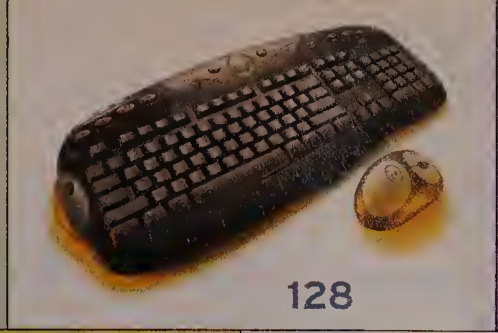

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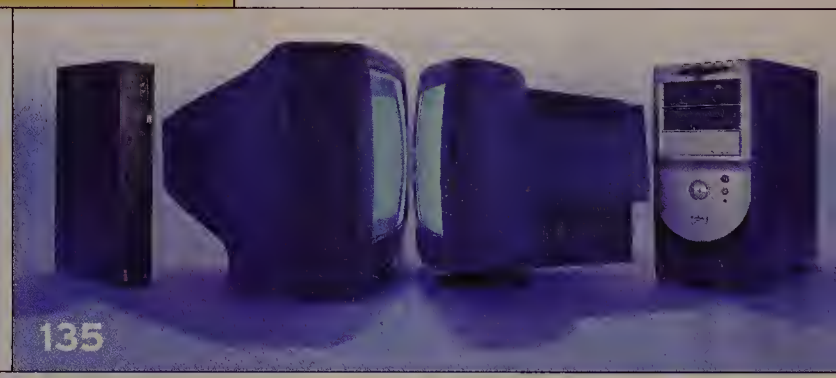

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Cover photography by Kevin Candland

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Brave New Web: Learn tips to help you survive in a world of fees, failures, and faulty service.
Online Gaming Galore: Don't miss our review of great Net games you can get free or for under $25.
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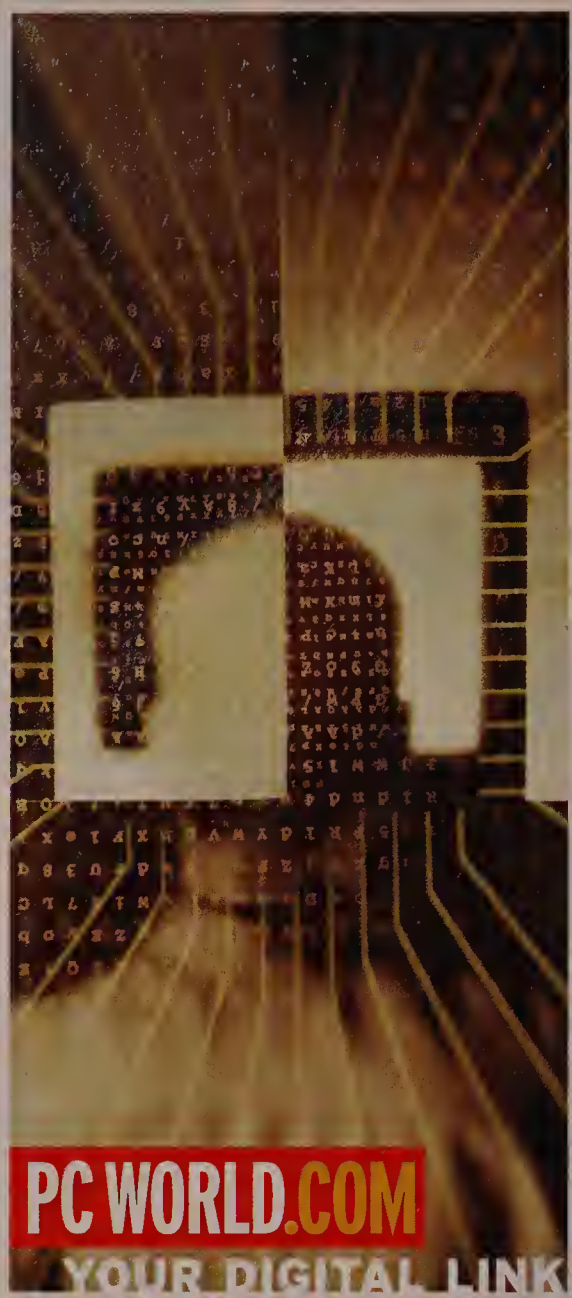

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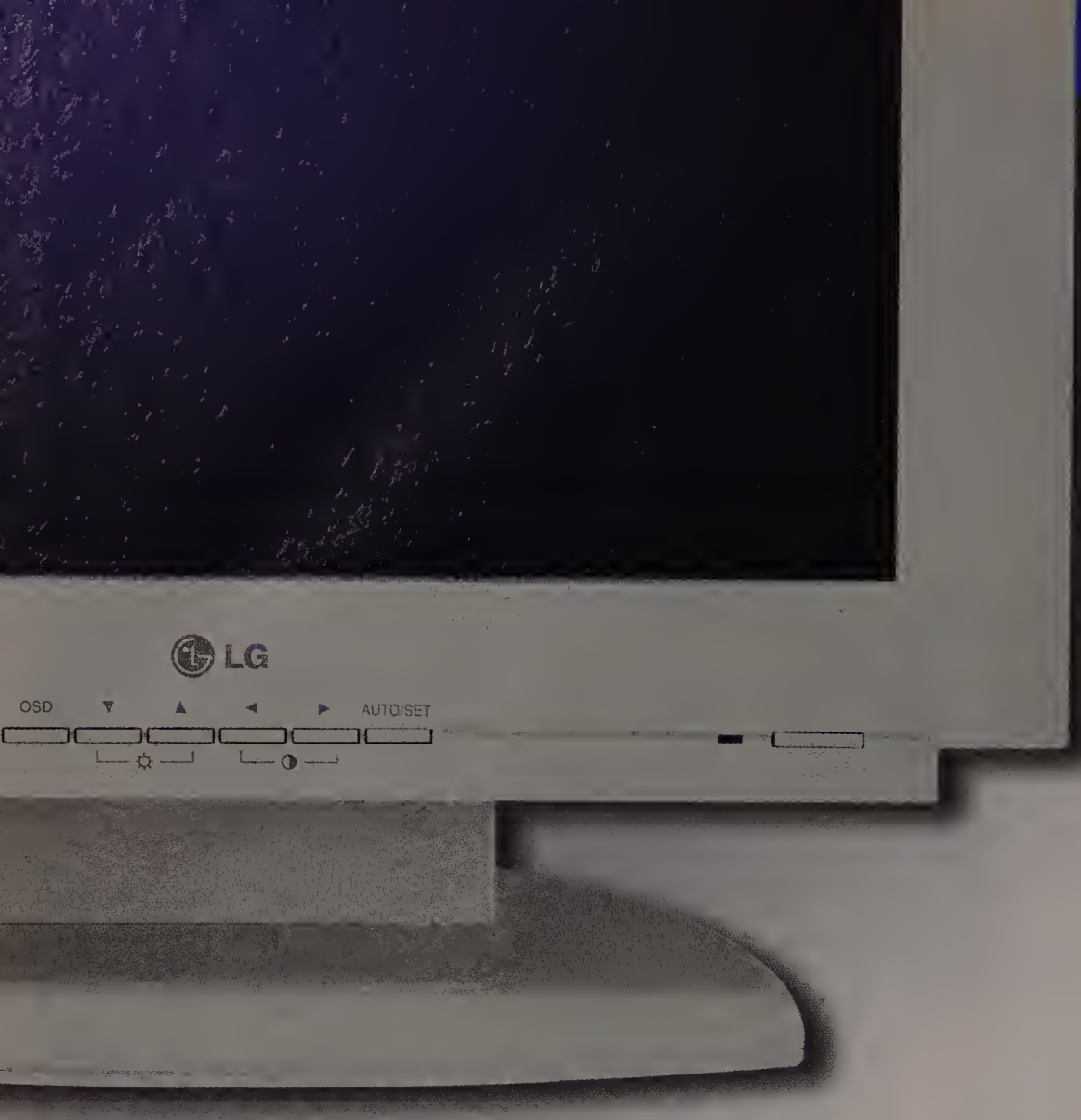

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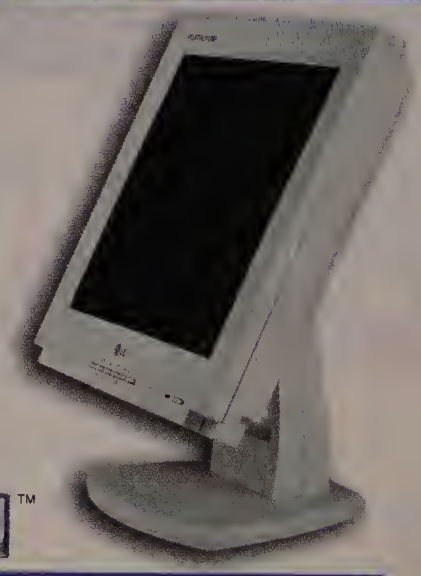

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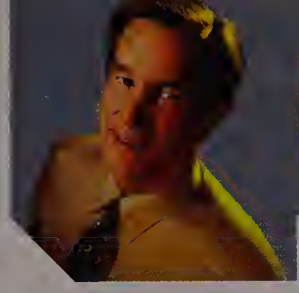


UP FRONT

KEVIN McKEAN

The Toughest Product Testers Around

Our lab uses an updated benchmark to mirror real-world conditions.

THE ENGINEERS AND LAB STAFF pictured below may look like a nice enough bunch of technicians. But looks can be deceiving. In fact, their job is to be as demanding as possible with the many products that *PC World* reviews, all so that you'll have an easier time with those you buy.

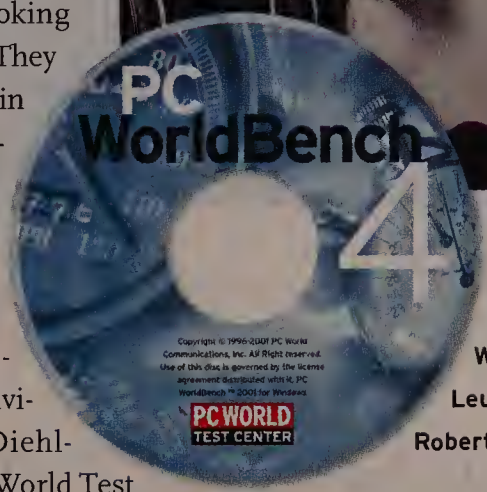
They're members of the PC World Test Center. Every month they put dozens of PCs, notebooks, printers, monitors, CD-RW drives, digital cameras, scanners, and more through rigorous analysis and testing.

Their aim is to find out which units perform best under real-world conditions. The results they generate form the bedrock of many news stories, reviews, and features in *PC World* (you can tell which ones by looking for the Test Center logo). They also underlie every listing in our popular *Top 100* section (see page 164).

"For each type of equipment, we devise tests that mirror the demands of a typical business, professional, or home-office environment," says Ulrike Diehlmann, director of the PC World Test Center. "Then we make sure the trials are administered in exactly the same way for each model, to keep things fair."

For example, the testing for this month's home computer roundup (see "Home PCs: All This and XP Too," page 106) marks the maiden voyage of PC WorldBench 4, the latest version of the benchmark used to test all PCs and notebooks.

PC WorldBench 4, which was created by Manager of Benchmark Development James Motch, runs each PC through a series of common tasks using 11 popular programs, including Microsoft's Word, Excel, Access, PowerPoint, and Visio; Adobe's Photoshop; Corel's Photo-Paint; Lotus's 1-2-3 and Word Pro; Intuit's Quicken; and Netscape's Communicator.



PC WORLD TEST CENTER STAFF (clockwise from lower left): James Motch, Ulrike Diehlmann, Julian Weatherby, Elliott Kirschling, Tony Leung, Thomas Luong, Jeffrey Kuta, Robert James, and Julio Giannobile.

This new version of our benchmark can now test machines running Windows XP, as well as Windows 98 SE, Windows Me, and Windows 2000. (See find.pcworld.com/15243 for more information on PC WorldBench 4.)

The results can be surprising. When the first Intel Pentium 4 processors came out, for example, the lab discovered that desktops equipped with a 1.5-GHz P4 ran slower on our suite of office apps than did machines with Athlon CPUs from rival AMD running at only 1.2 GHz. But the story didn't end there: When the first Athlon 4's appeared in notebooks earlier this year, they trailed a souped-up version of the old Pentium III chip in our tests.

The lesson here? The performance you'll see in a particular model of PC, printer, or digital camera doesn't always match the specs printed on the box.

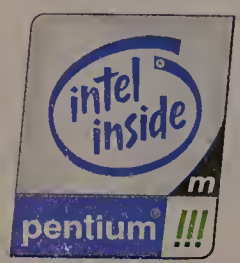
That's why the Test Center's job is so important. As Diehlmann says, "If we can help you make just one good product decision this month, or save you from a bad one, then our effort is worth it." Comments? Write to Ulrike at ulrike_diehlmann@pcworld.com or to me at kevin_mckean@pcworld.com.

Kevin McKean is editorial director. ■

Tell Us What You Think: Visit www.pcworld.com/pcwinput and rate this issue—you could win $500. You'll need your subscriber number from the mailing label to take this survey online. The Web site explains the official rules and also how to participate in the drawing if you're not a subscriber. You can enter from November 5 through November 30, 2001.

PHOTOGRAPH: ROBERT HOLMGREN

BECAUSE THIS IS THE WRONG YEAR TO INSIST ON A FLASHY COMPANY CAR.



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RADEON™ 7500

What's new and what's next in technology

NEWS & TRENDS

EDITED BY THE NEWS DEPARTMENT

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AMD STRIKES BACK

TEST Center

PERFORMANCE and controversy mark AMD's new Athlon XP.

The XP chips (*XP* stands for "extreme performance" and has no relation to Microsoft's Windows XP) debut at speeds that range from 1.33 to 1.53 GHz, but they're labeled according to a rating system that, AMD says, more accurately reflects the chips' performance. The new scheme is part of AMD's fierce battle to end the megahertz myth—namely, "The more the megahertz, the better the PC." It's the biggest marketing gamble AMD has taken in some time.

But regardless of whether this chip naming system pays off, the first Athlon XP machines seem top-notch.

In our tests of two preproduction systems based on the Athlon XP 1800+ (1.53-GHz) chip—the $2750 Polywell Poly 880XP-1800 and the $3049 Xi 1800+ MTower SP—both PCs outperformed a comparably

SPORTING THE ATHLON XP 1800+ CPU are Xi's 1800+ MTower SP (left) and Polywell's Poly 880XP-1800.

PHOTOGRAPH: KEVIN CANDLAND

configured 2-GHz Pentium 4 Dell machine (priced at $2919) on our PC WorldBench 2000 business-application tests and on several other measures.

Savvy PC shoppers already know that megahertz ratings don't reveal which processor makes a PC run fastest: Not until Intel pumped the P4's clock speed to 2 GHz did business systems using the P4 match the performance of PCs using the 1.4-GHz AMD Athlon, on most jobs. And if you're shopping for a high-end desktop PC today, you definitely have more than megahertz to consider. Looking ahead, Intel will also soon roll out some highly anticipated new P4 chips. However, analysts say that now—and even in the coming months—most value- and performance-minded buyers will find AMD Athlon XP PCs tough to beat.

AMD'S ATHLON XP DESKTOP CHIPS DEMOLISH PC WORLD'S PREVIOUS SPEED RECORDS ON BUSINESS APPS—AND DEBUT A CONTROVERSIAL NEW PERFORMANCE RATING SYSTEM.

BY LAURIANNE McLAUGHLIN

INSIDE XP RATINGS

THE ATHLON XP processor uses the same chip core, codenamed Palomino, found in Athlon 4 notebook chips. An XP CPU uses about 20 percent less power than the original Athlons and boasts design changes that speed information to waiting applications. It also has 3DNow Professional, which adds 52 new 3D and multimedia instructions and makes it compatible with Intel's SSE instructions.

Some Athlon XP systems may get a boost from NVidia's new NForce system chip set (see "May the NForce Be With You" on page 26). But the most debated aspect of the Athlon XP will no doubt be AMD's chip-performance ratings.

The ratings rank XP chips based on their performance relative to that of the most recent Athlons. For example, the fastest new chip is the XP 1800+, which according to AMD performs like a 1.8-GHz Athlon—though its true clock speed is 1.53 GHz. AMD also asserts that PCs with an XP 1800+ should run faster than comparable 1.8-GHz P4 units, a claim borne out in our business-applications testing.

Likewise, AMD claims that the Athlon XP 1700+, which runs at 1.47 GHz, delivers more speed than 1.7-GHz P4 systems; the Athlon XP 1600+, which runs at 1.4 GHz, outdoes 1.6-GHz units; and the XP 1500+, which runs at 1.33 GHz, bests 1.5-GHz systems.

Athlon XP system configurations will cite the chip clock speed, but not prominently (see "AMD's Ratings Gambit" on page 26). You'll see the AMD term "QuantiSpeed architecture" on XP system configurations, too. The term covers various XP design changes that improve performance, such as an enhanced floating-point unit and the CPU's new abilities to prefetch some data and to successfully anticipate some upcoming requests.

Clearly, AMD can't convey such improvements through megahertz. They affect a less familiar measure of performance: the number of small jobs a CPU can do in a clock cycle. While that number varies widely depending on the app, there's no question that the Athlon XP finishes more work per CPU clock cycle than the P4 does, says Kevin Krewell, senior analyst for Micro-Design Resources.

Still, AMD's rating scheme may prove a tough sell. "When consumers see MHz in fine print, they may be confused," says Krewell. Moreover, this is a temporary metric: AMD plans to unveil a new rating system with industry partners, perhaps in 2002.

Other performance-rating efforts, from vendors such as Cyrix, have failed—in part due to lack of credibility, as companies played fast and loose with the equivalencies. AMD, however, plans to use an independent firm to support its claims. And it can back up its rating system with a solid product, Krewell says.

FASTER THAN 2-GHZ P4

IN PC WORLDBENCH 2000 testing, the Polywell unit received a superb score of 259, followed closely by the Xi PC, with a mark of 250. In comparison, a recently tested Dell Dimension 2-GHz P4 system earned a noticeably slower 236. (All three systems ran Windows 2000 Professional; the XP systems had 256MB of DDR SDRAM, and the P4 had 256MB of RDRAM.) Also, both the XP PCs handily bested the 230 average score of two P4-1800–based units.

As for multimedia tasks, ▶

IN BRIEF

Pipeline

XBOX A 'GO': Microsoft begins its living room invasion with the November 15 launch of its much-hyped and slightly delayed Xbox, accompanied by 15 to 20 games. The console is configured with a 733-MHz Intel CPU, an 8GB hard drive, an NVidia graphics system, and a DVD-ROM drive. Microsoft hopes to challenge both Sony's PlayStation 2 and Nintendo's new Gamecube (launching on November 18) for console gamers' hearts.

UPDATE OF ZONEALARM: Zone Labs' new ZoneAlarm Pro 3.0 firewall includes several enhancements, such as new cookie management, improved security, and ad blocking that stymies even those pesky pop-up and pop-under ads. Zone Labs has also improved the look of the software, and provides more information in the alerts. Upgrade pricing is not final, but users who licensed ZoneAlarm Pro 2.6 within the past year can upgrade free.

Did You Know

DISCORDANT NOTE: Of surveyed Net users who have downloaded music previously, 74 percent would not be interested in paying for such a service. Among broadband users, the news was slightly better: About 29 percent indicated that they would be interested in a paid online music service.

74 PERCENT

SOURCE: EMARKETER

the three systems completed an MP3 conversion test in nearly identical times. But the Polywell and Xi units clearly outperformed the Dell P4 on our AutoCAD and Photoshop tests (see chart on page 28).

PRETTY PRICE TAGS

THE ATHLON XP PCs score high on value too. The speedy Poly 880XP-1800 packs a lot for $2750, including a 15,000-rpm 20GB SCSI hard drive, a 17-inch monitor, a DVD-ROM drive, and a CD-RW drive.

The $3049 Xi unit dishes up a generous plate of goodies for enthusiasts, with a DVD-RAM drive, a 19-inch ViewSonic G90F Perfect Flat monitor, and a RAID hard drive setup that interleaves, or "stripes," two 40GB hard drives to improve read/write times. Both XP PCs have solid graphics cards based on the NVidia GeForce3 with 64MB of DDR SDRAM, and excellent Creative Labs sound systems.

Due to the ongoing chip pricing wars, you'll likely save at least $200 by choosing an Athlon XP 1800+ system over a comparable 2-GHz P4 unit, although Intel's recent price drops and its introduction of a less-costly SDRAM P4 motherboard have made P4-based PCs more competitive.

One important issue, however, is how easy it will be for buyers to find Athlon PCs. ▶

AMD'S RATINGS GAMBIT

AMD'S CONTROVERSIAL new naming scheme replaces the familiar gigahertz with a rating that AMD claims more accurately reflects the new chip's performance. For example, on a store shelf, buyers will see the new CPU named as "Athlon XP 1800+" or "Athlon XP 1700+", meaning that the chips perform comparably to 1.8-GHz and 1.7-GHz CPUs, respectively, AMD says. Store stickers will also note the chips' actual gigahertz, but likely at the bottom of the configuration. AMD is using Andersen Consulting to audit its ratings, which are based on performance in 14 tests.

MOTHERBOARDS

MAY THE NFORCE BE WITH YOU

BEFITTING A NAME that sounds like something out of *Star Wars*, NVidia's NForce motherboard chip set—the graphics chip powerhouse's first—promises to supercharge Athlon XP systems. AMD collaborated with NVidia to develop the chip set, which further exploits AMD CPU designs. NForce works with Athlon XPs as well as with older Athlons and Durons. It deserves your attention for a number of reasons.

NForce integrates the graphics processor, ethernet controller, media and communications processor, and audio processor to eliminate the additional costs of expansion cards. But it's much smarter than previous integrated chip sets.

UNDER THE HOOD

NFORCE'S GRAPHICS processor performs several tricks that speed up various applications, not just graphics-intensive ones. Its TwinBank memory architecture uses two 64-bit DDR controllers that let apps ask for more data simultaneously. To pump information to apps quickly, the new onboard DASP (Dynamic Adaptive Speculative Pre-Processor) tracks historical CPU accesses, predicts future requests, and stores the data in an on-die buffer.

We tested an NForce reference system from NVidia with an older Athlon-1200 processor. It scored 227 on PC WorldBench 2000—almost matching the 228 average score for six Athlon-1333 PCs we've tested, and six points higher than the average of four Athlon-1200 machines. It also did fairly well compared with higher-megahertz Pentium 4 PCs (see the chart on page 28 for more).

The design innovations combine with NVidia's still-formidable GeForce2 technology to deliver that performance. "It's really the first time somebody has put a nearly top-of-the-line graphics core into a chip set," says Peter Glaskowsky, senior analyst for MicroDesign Resources. And unlike most integrated graphics designs, this one lets you upgrade later, using any AGP 4X graphics card.

In tests with popular games, we found virtually no visible difference at many resolutions between a system running NVidia's integrated graphics and the same system with a GeForce3 card. The GeForce3 pulled ahead, however, when we went to 1280 by 1024 and above, at 32-bit color.

NVIDIA'S motherboard chip set for AMD CPUs.

NForce's audio chip—the same one Microsoft's Xbox console uses—offloads additional work from the CPU. In a game, for example, that means the CPU has more power to focus on other calculations.

You shouldn't expect an NForce for Pentium 4 PCs anytime soon, Glaskowsky says. Though Intel could benefit from some of NVidia's breakthroughs, it wants to protect its own chip set sales, he says.

PHOTOGRAPH: KEVIN CANDLAND

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AMD faces financial worries due to renewed pricing pressure from Intel, compounded by the recent loss of a high-profile customer, Gateway. IBM too has dropped AMD chips from its North America offerings, and the proposed merger of HP and Compaq—AMD's last top-tier desktop customers—means users may have fewer choices. MicronPC still offers Athlon-based units, and lesser-known vendors such as Polywell, Xi, and Alienware will also continue to sell AMD-powered PCs.

NORTHWOOD AHEAD

AN ATHLON XP 1900+ chip may sneak out by the time you read this. MicronPC plans to offer a well-equipped Millennia XP+ Dream Machine system, based on the XP 1900+, for $2699 in November.

For its part, Intel will likely release the next P4 CPU, codenamed Northwood, around year's end, at speeds of 2.2 GHz or better. This will be the first P4 made with the .13-micron manufacturing process, which will yield smaller, faster, and relatively power-efficient chips. Northwood's on-chip secondary cache will jump from 256KB to 512KB, which is likely to boost performance on nearly all apps.

Northwood will pull ahead of the Athlon XP on some of the most demanding benchmark tests, says Krewell. But a Northwood PC's price premium won't make sense for many PC buyers, he predicts.

"Overall, the Athlon is not going to keep up frequency parity with the Pentium 4, but it will be pretty close on performance," Krewell says.

AMD plans to move to a .13-micron process next year, and in the second half of 2002 it plans to debut SOI (silicon-on-insulator) technology, which helps chips run fast on low power. Neither move will be simple, but AMD has successfully faced many challenges.

Today, the bottom line for users is good. Athlon XP systems offer plenty of power for business apps and for more-demanding tasks, such as photo editing, music ripping, and games. And most power-desktop shoppers can buy an Athlon XP PC without worrying that a better value will be coming along soon. ▶

AMD Athlon XP
★★★★½
Useful improvements help this chip fuel systems that outrun 2-GHz P4 PCs on office apps.
find.pcworld.com/15760

Poly 880XP-1800
(Preproduction unit, not rated)
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find.pcworld.com/15761

Xi 1800+ MTower SP
(Preproduction unit, not rated)
Loaded for enthusiasts with extras like a DVD-RAM drive.
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IN BRIEF

Tidbyte

COMPAQ RECALL: Compaq is recalling 1.4 million notebook power adapters because they may pose a fire risk; it's offering free replacement adapters. The suspect adapters came with various Armada and Prosignia models sold between September 1998 and July 2001. If you believe you have a faulty AC adapter, call Compaq at 888/302-7689; or visit find.pcworld.com/15860 for more information.

Did You Know?

44 PERCENT of early adopters surveyed, and 30 percent of all consumers polled, expressed interest in buying a voice, video, and data service bundle if it were available from the right provider.

44 PERCENT

TEST REPORT

PCs WITH ATHLON XP 1800+ SPRINT PAST 2-GHz P4 SYSTEMS

SYSTEM	Processor	Memory	PC WorldBench 2000 score (Faster)	ADDITIONAL TESTS (Lower score is better.) AutoCAD [1]	MusicMatch [1]	Photoshop 5.5 [1]
Polywell Poly 880XP-1800	Athlon XP 1800+	256MB DDR SDRAM	259	319	53	71
Xi 1800+ MTower SP	Athlon XP 1800+	256MB DDR SDRAM	250	327	53	70
Dell Dimension 8200	P4-2000	256MB RDRAM	236	484	54	89
NVidia NForce reference system	Athlon-1200	224MB DDR SDRAM [2]	227	411	67	90
Average of two systems	P4-1800	256MB RDRAM	230	n/a	n/a	n/a
Average of eleven systems	P4-1700	256MB RDRAM	217	n/a	n/a	n/a
Average of five systems	Athlon-1400	256MB SDRAM	239	n/a	n/a	n/a
Average of six systems	Athlon-1333	256MB SDRAM	228	n/a	n/a	n/a
Average of four systems	Athlon-1200	256MB SDRAM	221	n/a	n/a	n/a

TEST Center

HOW WE TEST: All systems here ran Windows 2000 Professional and were tested with PC WorldBench 2000, an applications-based benchmark. In the AutoCAD test, we timed Autodesk Group International's AUGI Gauge benchmark, which runs computer-aided drafting tests. In the MusicMatch Jukebox encoding test, we timed the conversion of a raw 14.3MB .wav file to .mp3 format. In the Photoshop 5.5 test, we timed the running of a macro that applies a series of filters to a 1.6MB image file. For PC WorldBench 2000, a higher score is better; for all other test results here, lower is better. All rights reserved. n/a = Not applicable. [1] Time in seconds. [2] An additional 32MB is dedicated to integrated graphics.

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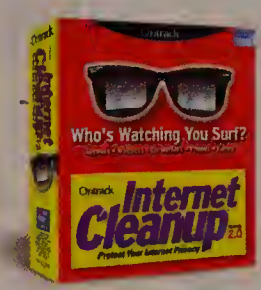

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COLLABORATION

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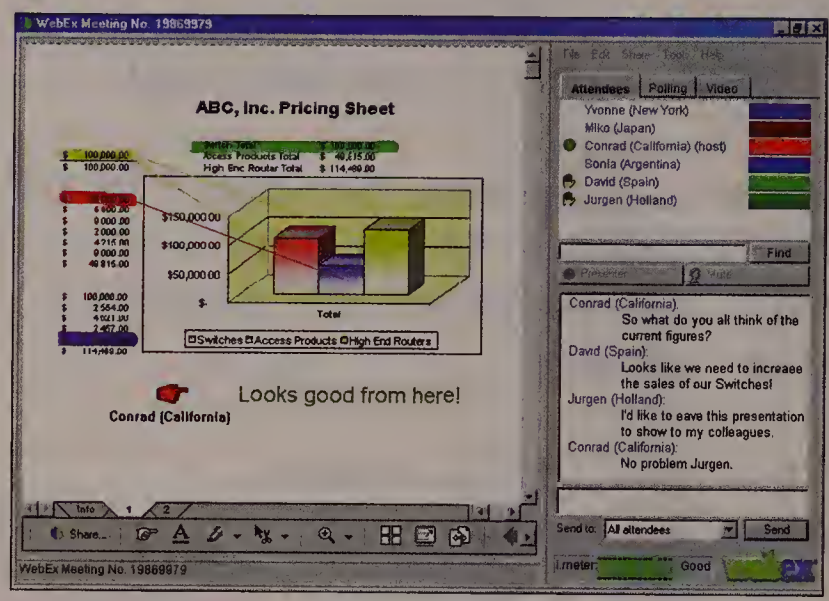
USER-FRIENDLY WEB-CONFERENCING SERVICES DELIVER MANY BENEFITS OF IN-PERSON MEETINGS, WITHOUT HASSLE AND EXPENSE.

WHY PAY for airline tickets, wait in long lines, and spend hours traveling when current Web services let you work with colleagues in real time without leaving your office?

Web-meeting services first appeared a couple of years ago, but now they're easier to use and offer more online-collaboration features. Companies such as Centra Software, Genesys Conferencing, PlaceWare, and WebEx (the latter won our 2001 World Class Award for Best Group Application; see the July 2001 issue, or visit find.pcworld.com/15281)—all offer tools that allow you to conduct both small meetings and large conferences from several sites.



MAKE YOUR MARK: Web-conferencing services such as WebEx allow participants to mark up documents and chat with each other.

OFF-ROAD FEATURES

WITHOUT leaving their desks, participants can converse, chat online, share applications, annotate documents, and in some cases see each other through Web-based video cameras.

These services are very good at what they do. Although they don't offer the benefits of real-time videoconferencing (see "Videoconferencing: If Face Time Counts," below), they handle just about everything else. In fact, Web-meeting services generally offer better collaboration tools than videoconferencing systems can.

You can use Web-meeting services to deliver slide-show presentations in real time, broadcast company information, conduct question-and-answer sessions, mark up documents with several colleagues, and even take control of a remote PC, whether to demonstrate a software program or to troubleshoot a system problem. In addition, they're incredibly easy to use: All you need is a Web browser, an Internet connection, and your computer's standard mouse and keyboard.

The services can be an excellent choice for companies that want to safely and cheaply pull together people who need to interact, collaborate, or learn.

HOW TO CHOOSE

TYPICALLY, online tools address two main types of collaboration: small meetings of a few individuals, and large conferences with a presenter or a moderator (or a teacher, in the case of an online classroom). Most major companies offer the same basic collaboration tools, but you should look for some key features.

If your company uses several computing platforms, look for a service that works with all of them. WebEx Meeting Center, for instance, sup- ▶

VIDEOCONFERENCING: IF FACE TIME COUNTS

FOR SOME BUSINESS dealings, there's no substitute for real-time, in-person collaboration. Salespeople, for example, rely heavily on face time. Though PC-mounted Webcams permit some visual contact, they deliver herky-jerky video. On the other hand, new plug-and-play videoconferencing systems with integrated collaboration tools appeal to businesses that have shunned videoconferencing in the past for being too expensive and difficult to use.

Products such as PictureTel's 600 series of appliances (www.picturetel.com) feature an integrated PC to support PowerPoint presentations and online collaboration. Such devices are ideal for conference rooms and work over LAN or ISDN connections. Starting at $6995, the PictureTel 600 is less expensive than previous comparable systems, but it obviously is not cheap.

NO INEXPENSIVE OPTION

MORE AFFORDABLE, and still considerably more powerful than a basic Webcam, Polycom's $599 ViaVideo has a multimedia processor that the company says enhances videoconferencing over IP networks. (At press time, PictureTel had merged with Polycom. There was no news on how their respective product lines would be affected.)

The bottom line: Good quality, real-time videoconferencing still costs more than other methods of online collaboration. Aside from the cost of the camera systems (one for each participating person or group), you may have to invest heavily to upgrade your network to properly support the technology.

Still, the consulting firm Frost and Sullivan expects more companies to adopt videoconferencing systems and cut back on corporate travel. Says analyst Roopam Jain, "The economy has taken a beating, tragic events have affected air travel, and at the same time videoconferencing technology has gotten better."

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[2]Service may be provided by third party. Technician will be dispatched, if necessary, following phone-based troubleshooting. To receive Next-Business-Day service, Dell must notify service provider before 5 pm (depending on service contract) customer's time. Availability varies. [5]For hard drives, GB means 1 billion bytes; accessible capacity varies with operating environment. [6]Download speeds limited to 53Kbps. Upload speeds are less (about 30Kbps) and vary by modem manufacturer and line conditions. Analog phone line and compatible server required. [11]Monthly payment based on 48 MONTH 12.49% INTEREST RATE FOR QUALIFIED BUSINESS CUSTOMERS. OFFER VARIES BY CREDITWORTHINESS OF CUSTOMER AS DETERMINED BY LENDER. Taxes, fees and shipping charges extra and vary. Business Loan from CIT OnLine Bank to small business customers with approved credit. [3]CompleteCare service excludes theft, loss and damage due to fire or intentional damage. CompleteCare is currently not available in all states. For complete details, visit www.dell.com/us/en/bsd/ services/service_complete-care_svc.htm. [10]Up to 11MB of system memory may be allocated to support DVMT Graphics. [4]Service may be provided by a third-party provider under contract with Dell. Technician will be dispatched if necessary following phone based trouble-

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$629 Business Loan: **$17**/mo., 48 mos.[11]
E-VALUE Code: 10239-291106

Recommended upgrades:
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- Same Day 4-Hour (5x10) On-Site Service,[49] add $349

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- Embedded Ultra3 (Ultra 160) SCSI Controller
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$799 Business Loan: **$21**/mo., 48 mos.[11]
E-VALUE Code: 10239-291107

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ports Mac and Unix systems as well as Windows PCs; Centra EMeeting supports only Windows (see the chart "Web Conferencing: What You Get, What You Don't" below). And all the services work best over high-speed Internet hookups, but some participants may be on a standard modem connection. Some services say you can get by on a 28.8-kbps modem, but you really need at least a 56-kbps connection to enjoy true collaboration, including application sharing and online presentations.

Since no Web-based tool can replace voice communication completely, you'll want a service with integrated teleconferencing—the ability to set up a phone call with multiple participants. Someday, voice-over-IP technology may save you money by letting you use your PC as a phone, but audio quality today is poor. WebEx and Centra currently support voice over IP.

WebEx and PlaceWare allow you to use Webcams during online conferences so that attendees can see each other. WebEx allows a meeting's presenter to remain on screen until ceding control to another. With a high-speed connection, the video quality is reasonably good, although still too choppy and unsynchronized for normal conversation. Still, real-time video can be useful for showing people such items as product packaging, hardware, and so on.

WHAT YOU CAN DO ON THE WEB

- Application demos
- Document collaboration
- Online training
- Presentations
- Seminars/lectures
- Technical support

Participants can converse, chat, share applications, and annotate documents.

IS IT SECURE?

BUSINESSES worry about the security of third-party Web tools; you'll want a service that will maintain strict firewall protection and still allow collaboration over the Web. All of the major Web services work fine with most firewalls, but you should test them with yours (many services offer free trials). Some of the services offer optional Secure Sockets Layer encryption to protect communications. But SSL's heavy CPU demands can slow down communications—a potential problem over a modem connection.

Compared with the cost of travel, Web-based meeting services can be economical. For example, Genesys Meeting Center (based on Astound Conference Center) offers groups of up to 15 people unlimited usage for a dirt-cheap $40 per month. By contrast, WebEx costs $100 a month—or 45 cents per minute—for *each user*.

As online meeting services improve, they become more useful. "In light of the political and economic changes that have taken place over the past year, companies want safe, cost-effective alternatives to travel," says Roopam Jain, an analyst for the consulting firm Frost and Sullivan. "A lot of companies that are not ready to nosedive into videoconferencing will try Web conferencing."

—*Brad Grimes* ▶

IN BRIEF

Did You know

UNIQUE home users of file-sharing apps (excluding Napster) grew 492 percent, from 1.2 to 6.9 million, between March and August 2001.

492 PERCENT

SOURCE: JUPITER MEDIA METRIX

Site to See

BOUNCE AROUND as an inflatable duck, navigate obstacles as a lively lamp, or take an e-hot rod for a spin.

The www.virtools.com site showcases its 3D content development tools to clients (such as system integrators and game studios)—but its fabulous toys make it fun for anyone. Download the Virtools Web Player to experience amazing 3D graphics rendered with physics-based accuracy.

SCORECARD

WEB CONFERENCING: WHAT YOU GET, WHAT YOU DON'T

ALMOST ALL WEB-CONFERENCING services provide whiteboarding and polling features, and allow you to give presentations and share applications. Differences still exist, however. Below are costs and additional features of four major Web-conferencing services.

SERVICE	Cost	Macintosh support	Unix support	Teleconferencing	Voice over IP	Webcam integration	SSL option
Centra EMeeting	$80/seat/month	○	○	○	●	○	○
Genesys Meeting Center	$40/month (up to 15 users)	●	●	●	○	○	●
PlaceWare	$100/seat/month	○	●	○	○	●	●
WebEx Meeting Center	$0.45/minute/user or $100/seat/month	●	●	●	●	●	●

● = Yes ○ = No

DISPLAYS

SMALLEST PROJECTORS NOW DOWN TO 2 POUNDS

BOOK-SIZE MODEL SACRIFICES SOME—BUT NOT MANY—FEATURES.

PLUS'S introduction last year of the first 3-pound digital projector was a milestone in miniaturizing these devices. Now the company has done it again, shaving a third off the weight of last year's model.

Weighing just 2 pounds, the Plus Lightware Series V-807 is about the size of a large paperback, measuring a compact 5.6 by 7 by 1.8 inches (width by depth by height). Add a lightweight laptop, and you have a complete presentation system that you can easily tote in a single carrying case. And this munchkin won't break your budget: The V-807's suggested retail price is $2295.

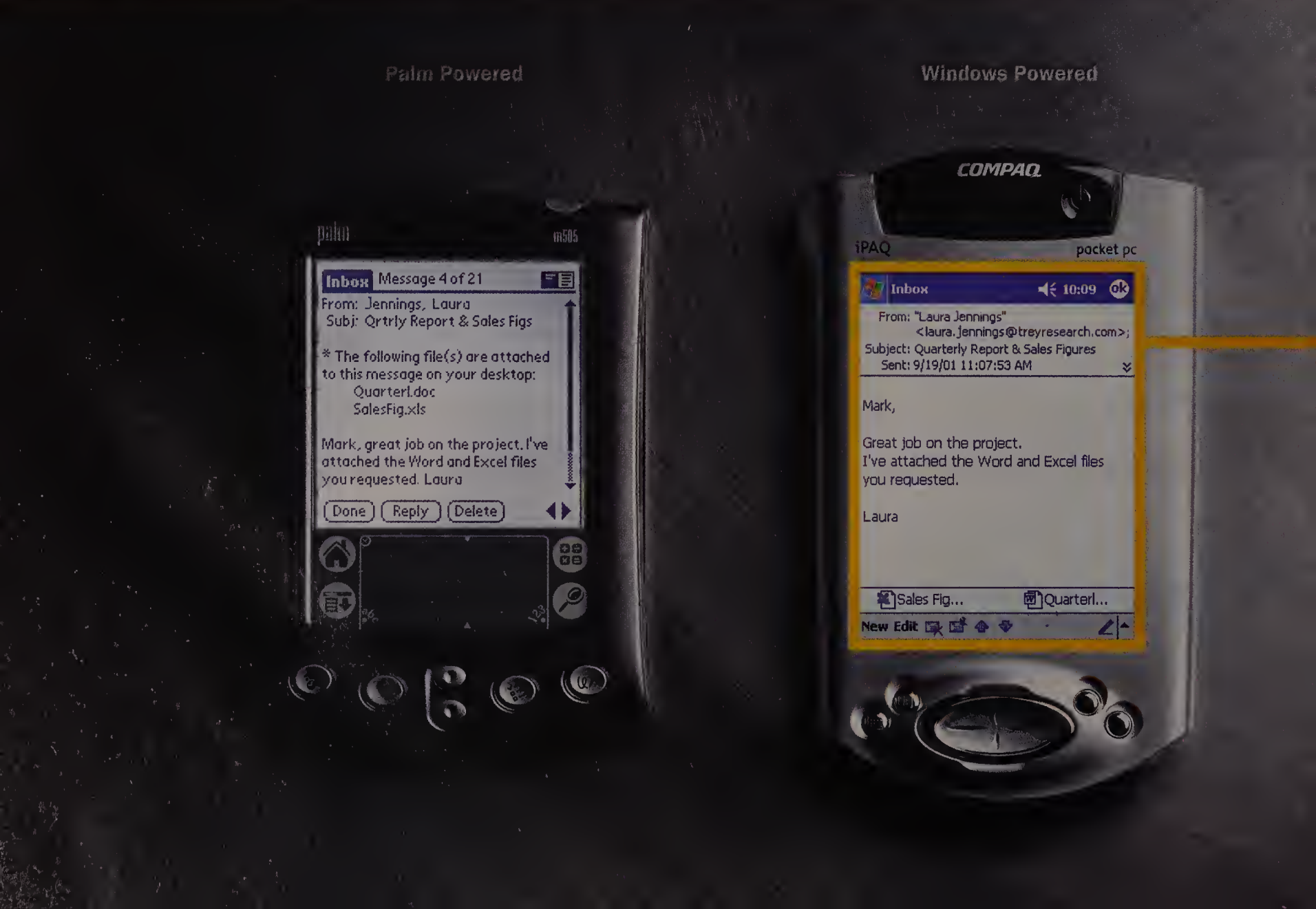
DLP SAVES BULK

LIKE PLUS'S previous lightweight projectors, the V-807 uses Texas Instruments' Digital Light Processing single-chip technology, which generally produces brighter and crisper images than competing LCD systems, which typically require larger and heavier cases. The V-807 provides a native SVGA (800 by 600) resolution and delivers light output rated at 700 ANSI lumens—bright enough for small-group presentations in a dimly lit room, but not for large groups or auditoriums. The rated lamp life is 1000 hours, which is typical for small projectors like this.

Naturally, manufacturing such a small projector requires making some sacrifices. The V-807's controls and input options are kept to a bare minimum. For example, instead of a separate power switch (always a convenience for turning the projector completely on or off), you get just a button for switching the unit from the standby low-power mode to the full-power mode. The unit offers only a mono speaker and only one input each for video, sound, and computer—there's no extra computer port for hooking up a second PC or external monitor. And you get no USB or serial port for a mouse.

TRADE-OFFS: NOT TOO PAINFUL

THE SINGLE video input supports all three types of video sources—composite, S-Video,



and component video—but obviously you can attach only one at a time. Plus also keeps the unit's weight down by using a fixed-focus lens rather than a larger and heavier zoom lens. Absent a zoom, you must set up the projector at a specific distance to fill the screen, a potential inconvenience in homes or other locations where finding a portable stand or moving the projector might be difficult.

But despite its limitations, the preproduction version of the V-807 I tested performed well. At a short distance of 7 feet from the screen, the unit displayed 60-inch-diagonal images that were both crisp and colorful, whether the image was a PowerPoint presentation, a digital photograph, or a test pattern (for alignment, color saturation, scaled fonts, and so on). I was particularly impressed by the projector's quiet fan, and the fact that the unit didn't overheat, even after I used it to watch a 2-hour DVD movie.

LIGHTER THAN a laptop: The Plus Lightware Series V-807 checks in at exactly 2 pounds.

The V-807 also seemed reasonably well constructed, but (as with any lightweight piece of electronics) you would be wise to treat this projector as delicate, fragile equipment.

The V-807 uses a digital video interface (DVI, a standard also used by some LCD monitors) for its PC connection, but since the majority of PCs don't support DVI connectivity, it also includes a DVI-to-VGA adapter. An infrared remote control, assorted cables, and a soft carrying case are in the bundle as well.

If you're in the market for a highly transportable projector to use for personal presentations ranging from small-group talks to one-on-one shows presented in office cubicles, the Plus Lightware Series V-807 is an excellent choice. Later this year, Plus also plans to release the V-1080, an XGA (1024-by-768) version of the projector (also rated at 700 ANSI lumens), at an estimated price of $3000.

—Richard Jantz ▶

Plus Lightware Series V-807

(Preproduction unit, not rated)

List: $2295

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PHOTOGRAPH: KEVIN CANDLAND

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SOFTWARE

XP PLUS RATES A BIG D-MINUS

MICROSOFT'S BUNDLE OF GAMES, THEMES, AND MEDIA EXTRAS JUST ISN'T WORTH $40.

PLUS FOR WINDOWS XP bundles themes such as the Aquarium (above), along with screen savers, icons, and pointers (right).

MICROSOFT'S Plus add-ons for Windows have never ranked very high on anybody's list of must-have software, but the latest version—for Windows XP—hits a new low. It includes jazzy window dressing, several inconsequential multimedia gizmos, and a few games—but nothing of substance to justify the $40 price.

The new Plus's most innovative features have to do with Windows XP's much-touted multimedia capabilities. Topping the list is an application that enables voice commands for Windows Media Player for Windows XP. It took me a good half hour to train the speech recognition engine and get the feature up and running, but in the end I was able, by barking commands, to get Media Player to play tracks, pause, move between tracks, and even run a specific playlist or play music by a particular artist—although occasionally I had to repeat myself a couple of times. Other commands let you hide or display various features, or even summon the help screen if you forget a command.

If you're planning to use Windows XP's CD-burning capability, Plus's CD-label creation program might come in handy. Plus's Personal DJ does simplify playlist creation, but this task wasn't exactly arduous to begin with.

A Speaker Enhancement feature integrated into Media Player is supposed to improve sound quality by optimizing for specific models of speakers. In my tests using Altec Lansing speakers, the sound was louder and seemed richer, with added reverb. However, clarity at the high end seemed compromised. Unfortunately, the feature doesn't yet support all speakers, including the Logitech line.

In the category of most self-serving feature is a tool that converts MP3 files to Microsoft's WMA format. Microsoft says WMA saves space without sacrificing quality, but in our tests of digital audio formats, there was no clear winner between MP3 and WMA (see last month's "Easy As MP3" at find.pcworld.com/15620). Finally, Plus includes extra skins and visualizations (psychedelic animations) for Media Player.

Other Plus features will be familiar to users of Plus packages for Windows 95 and 98. You get four themes—coordinated desktop elements such as wallpaper, cursors, icons, a screen saver, program sounds, and so on. I liked the Aquarium theme, with its turquoise-blue underwater wallpaper, its creaky-ship sound effect for program close, and its screen saver with realistic-looking tropical fish swimming in a virtual aquarium (Microsoft licensed this screen saver from SereneScreen, whose Windows 98/Me version does not work in Windows XP). Space, Nature, and Da Vinci collections round out the theme offerings. You can also try out the 3D Robot Circus, Mercury Pool, or Sand Pendulum screen savers.

TRIO OF GAMES

NO PLUS package is complete without a couple of games, and XP's offers three. My favorite was Russian Square, a Tetris-like puzzle game; the others are a 3D labyrinth and a limited version of HyperBowl, a bowling game set in various scenic locales.

The games, Media Player features, and screen enhancements aren't bad, but they clearly won't be on any business buyer's shopping list—and at $40 they seem overpriced, even for consumers. At least with Plus 98 you got a useful file-compression utility, and Plus 95 had a system agent (which automated several key utilities) and a dial-up networking server. This year's Plus adds up to a big minus.

—*Yardena Arar* ■

Plus
Microsoft
★½☆☆☆
List: $40
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IN BRIEF

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TOP 5

1 **Clean System Directory** 70KB
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2 **Star Trek Voyager 3D Screen Saver** 92KB
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3 **Comparator** 520KB
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4 **WinRAM Turbo Free** 368KB
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5 **LPJ-Slideshow** 1240KB
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G2

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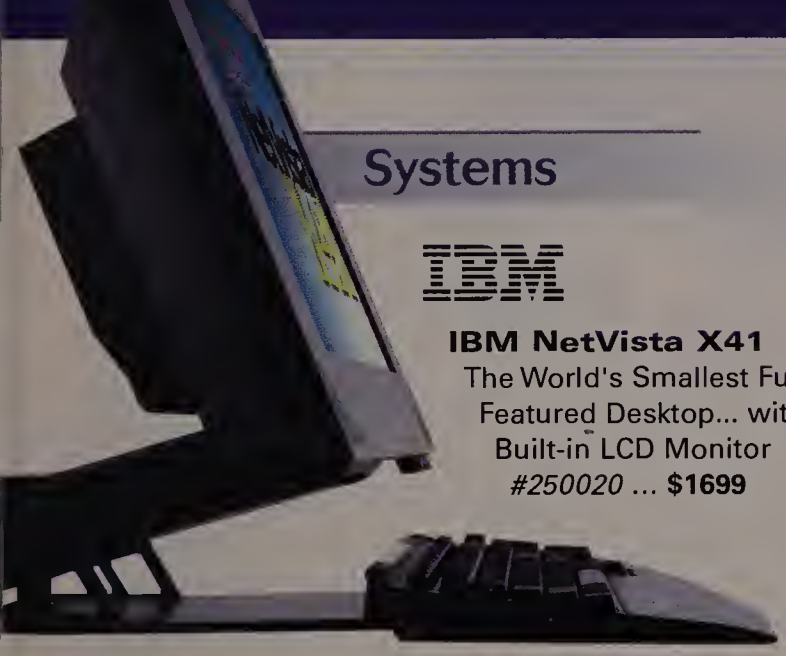

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LETTERS

LETTERS@PCWORLD.COM

WHAT HAPPENED TO PANDA?

PCWORLD.COM'S RESOURCES

WITH A LAPTOP AND A MACHETE...

PC DEALS: FANS AND CRITICS

OCTOBER's feature "PC Deals: You Better Shop Around" was an excellent article on where to buy your next PC. I recently took my father to two stores to select a computer. Both were overflowing with shoppers waiting for sales help. At Best Buy, our system of choice was on the top shelf and unreachable without a ladder. After waiting 30 minutes for a salesperson to bring the unit down, we returned home, went online, and quickly ordered a Dell. Your story is right on target about the convenience, the ease of use, and the effectiveness of shopping online for a computer as compared with shopping for one at a retail store.

S. S. Frazier, Houston

AS SOMEONE WHO falls in the "Mom & Pop" category (I'm Pop), I have somewhat mixed emotions about this story. In a way, I wish you'd come to *me* for a computer; I daresay I would have made it in as a "best" experience from the purchasing aspect, and I would not have passed on charges I was not subjected to.

Had you bought with the intent of *keeping* your machine, you would have had not only unparalleled quality for price, but genuine and immediate help over the phone, in-home setup and service, free tutorials, one-working-day turnaround for warranty parts exchange and installation for the first full year (also free of charge), and finally the security of knowing that I work with a local wholesale vendor that straight-up supports me in all situations!

Eric D. Constable, Reno, Nevada

WORKING FOR COMPUSA, I resent your article's conclusions. You state that the CompUSA(s) you visited had inept team members and that you were put off by the warranties and replacement plans.

1. *Every* CompUSA has a repair shop manned by A+ certified technicians.
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William F. Gilbert
Parsippany, New Jersey

LETTER OF THE MONTH

A Little Too Remote for Windows XP

MY COWORKERS AND I will not be upgrading to Windows XP for one reason only: the required activation. But it's not what you think. We are missionaries working in a rural area of Paraguay, South America. We've had to replace various components in our computers in the past because of the extreme climate conditions and poor electricity. I've had to reinstall Windows 98 SE numerous times because of data corruption and hard drive failures. If I were forced to reactivate the operating system after every reinstallation or hardware change, I would need to transport my machine 2 hours into the city for a very slow dial-up connection. I have other missionary friends who would have to travel three days by boat and then two days by bus to get an Internet connection. It's too much to ask. So we will not be upgrading to Windows XP.

If you wonder how I'm sending an e-mail message: We use amateur radio packets for text-only transmissions off a tower in Bolivia. Talk about *slow!*

Shawn Parrish, Escobar, Paraguay

POWER PC RATINGS EXPLAINED

I HATE TO SAY THIS, but you are starting to lose a bit of credibility with me. In October's *Top 100*, how in the world does the second slowest PC on the *Top 10 Power PCs* chart [the Dell OptiPlex GX400] rank as your number one machine?

Mark Allshouse, Baltimore

Editor's response: Even for power systems, performance is not the predominant factor in our rankings. Our readership regards reliability and service as very important, along with such considerations as documentation, bundled software, network management tools, and ease of upgradability. You'll find our scoring weightings at the bottom of the charts. —Tracey Capen

STEALTH FIGHTER'S STUMBLE

YOUR ARTICLE ON antivirus programs, "Stealth Fighters" [September], was great on technical info and performance stats but missed one of the most important features of *any* software, which is support! I installed Panda Platinum; the program did disinfect several viruses, but it also ▶

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renamed some files. Fixing this required changes to the Registry, but despite repeated calls—and assurances on two occasions that "instructions" were on the way—I have not received any help. Sorry, Panda, I am asking for my money back.

William Muhs, via the Internet

Editor's response: We've received several complaints on Panda's service. Patrick Hinojosa, general manager of Panda Software, sent us this answer: "The recent tremendous surge in business Panda has experienced (due in part to the high praise *PC World* gave us and partly to the heightened state of security awareness) did result in a support backlog. We are revamping our phone systems and adding personnel; Panda is now providing customers with the same superior tech support as we have in the past." **–Richard Baguley**

EYES ON THE SITE

AFTER MONTHS of playing around with my computer, I'm pleased to say your site has been the best educational resource for my particular (peculiar?) thinking processes. PC Pitstop [under the Tools tab] is excellent, and your site's format is just simple enough for me to figure out.

B. Larson, via the Internet ■

PC World *welcomes your letters to the editor. Send e-mail to letters@pcworld.com.*

CORRECTIONS

IN NOVEMBER'S "Easy as MP3," the sidebar "Compressed Audio: Can You Tell the Difference?" should have said that five pieces of music (not four) were used in our testing. See find.pcworld.com/11900 for testing details.

In October's "PC Deals: You Better Shop Around," we should have said Best Buy charges a 15 percent restocking fee only on laptop PCs (and certain other products), but not on desktops.

October's *Home Office* should have said TamoSoft's CommView costs $99.

October's *Web Savvy* on Upromise (www.upromise.com) should have said that accounts with the service are protected (not insured) by the Securities Investor Protection Corporation.

PC World regrets the errors.

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ILLUSTRATION: VICTOR JUHASZ

IF ANYTHING SHOWED the awesome power of the Internet to do good, it was the immediate aftermath of the September 11 terrorist attacks. In the first week after the disaster, six Web sites raised $57 million in disaster relief donations.

More millions came in to other sites. The amounts are staggering, considering that the largest amount raised online for any previous disaster was $2.5 million. At a time when millions of people wanted to do whatever they could to help, the Internet offered an instantaneous way for individuals to register their compassion.

Unfortunately, the days following the attacks also showed that the Internet provides a safe haven for some of the most despicable con artists imaginable. Scant hours after the tragedy, news agencies reported that scam artists were already using junk e-mail to solicit contributions supposedly earmarked for the families of victims of the tragedy. Links in one spam message sent readers not to the American Red Cross site, as advertised, but to the scam artists' own site, where the wrongdoers collected money and credit card numbers from unsuspecting donors.

The online response to the disaster showed just how comfortable people have become with donating online—a development that won't be lost on legitimate charities or on con men. As we enter the season of giving, your greatest challenge may be to distinguish one group from the other. Fortunately, the Internet puts numerous resources at your fingertips to help make your research quick and easy. So whether you want to support relief efforts in New York City or make your aunt's holiday present a donation to her favorite cause, take the time to check out who's really getting your money—and exactly what they're using it for.

The first step may be to find a charity to support. Suppose you'd like to help literacy programs in your home state, but you don't know where to direct your contribution. Try visiting www.helping.org or www.justgive.org. Both sites (which are run by nonprofit organizations) maintain databases of hundreds of thousands of national nonprofit organizations, searchable by area of focus, city, and state. They also provide information on volunteering.

Being listed at one of these sites, however, doesn't guarantee that a charity will use your contribution efficiently. Though the sites require that the charities they list meet certain standards, such as filing the IRS's Tax Form 990 (which most tax-exempt nonprofit organizations must do), they generally don't have the time or the resources to police each group's business practices, and in most cases they don't endorse specific charities. It is up to you to decide which of the groups will make the best use of your contribution.

How do you make that decision? ▶

PRIVACY WATCH

Should Your Boss Be Allowed to Search Your Hard Drive?

LET'S ADMIT THAT NO ONE spends every minute at the office on business. If you're like a lot of people, your hard drive may contain a few downloaded MP3s, some saved CD-ROM games, a spreadsheet for the office football pool, or perhaps even a cover letter to a potential new employer. The company you work for owns the computer you use—but does that give your boss the right to search your hard drive?

It's a tricky question, whether you're a worker bee or a boss. But many companies would answer yes. And many supervisors feel free to search an employee's hard drive without warning. A case in point at the New York Times Company: A supervisor discovered an envelope containing potentially offensive material, and managers decided to scan the hard drives of every member of the department from which they suspected the papers came.

The affected employees were given no warning that management was about to scan their hard drives. When the scans turned up dirty jokes in e-mails, pornographic pictures, and other unsavory personal files, management fired 10 percent of the employees whose drives they inspected and reprimanded others.

Conventional legal wisdom holds that the Times acted within its rights: Employees can't expect to keep private any material they put on a company-owned computer. But in a recent paper, federal judge James M. Rosenbaum questions that conventional wisdom. "Just as an employee does not surrender all privacy rights on the company's premises," he argues, "so they should not be automatically surrendered on the company's computer."

Rosenbaum recommends that businesses be required to warn workers before they scan their hard drives, to specify exactly what they're looking for, and to give the employees a chance to respond while the hard drive is quarantined, but before it is searched. That arrangement would be a huge step forward. In the meantime, don't assume that anything you put on your office computer is for your eyes only.

—Andrew Brandt ▶

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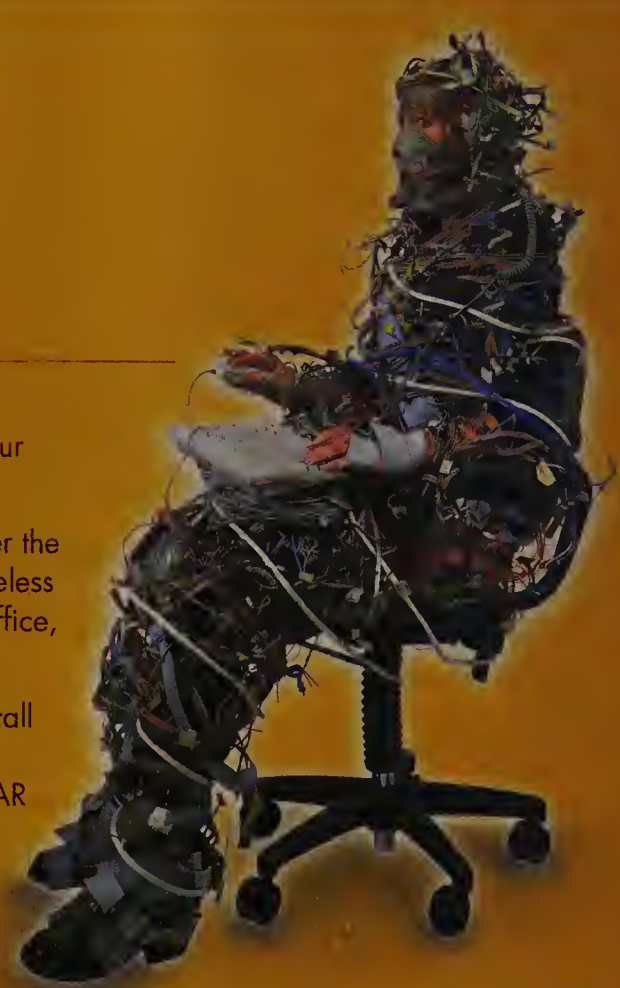

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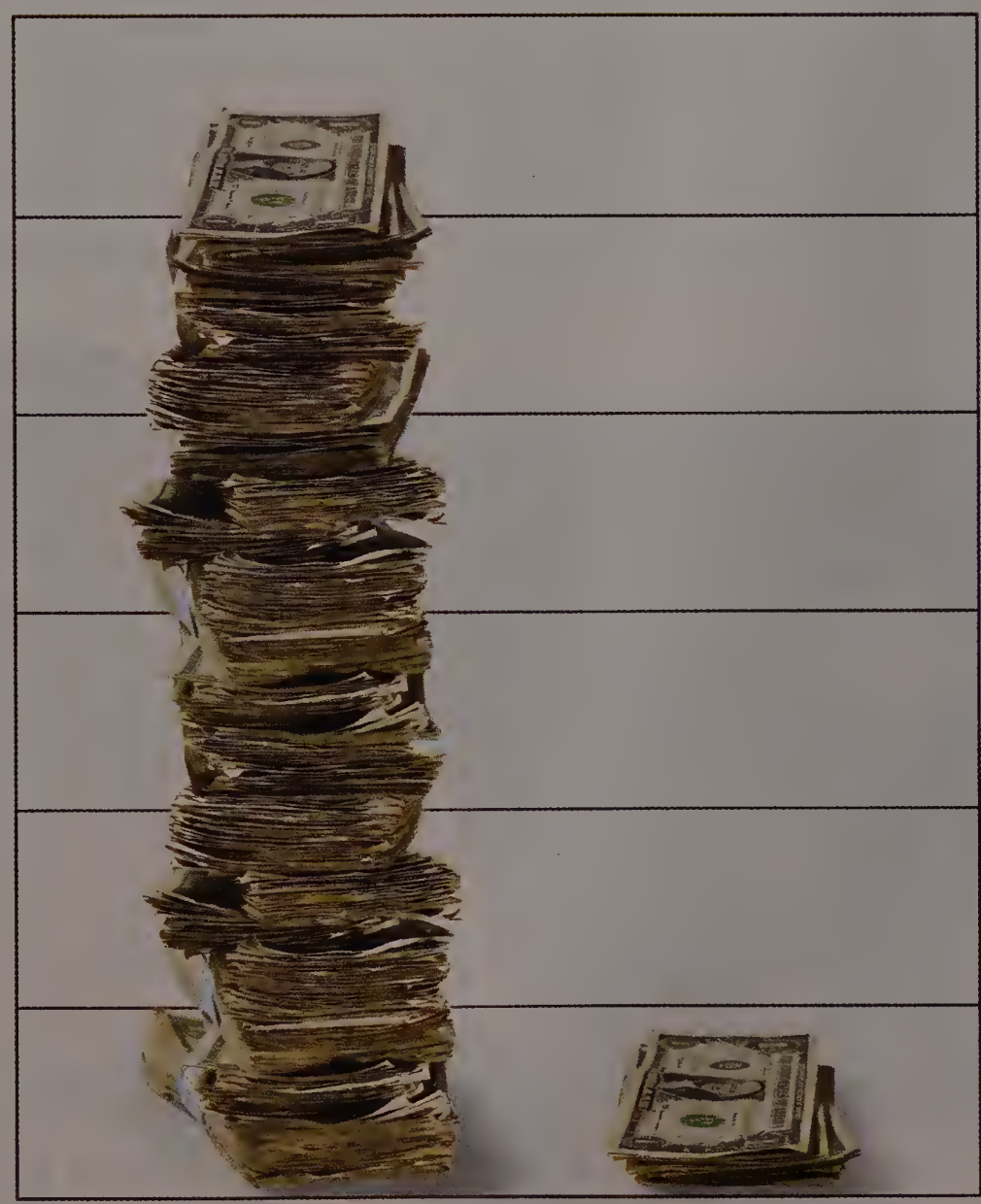

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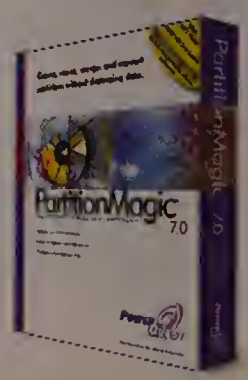

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Start by visiting the charity's own Web site. A good nonprofit site should offer a concise mission statement that clearly describes what the organization does, specifies how it does it, and explains how your contribution will be used.

"Ideally, at least 50 percent of your contribution should go to programs and activities that are directly related to the organization's purposes, and no more than 35 percent of its contributions should go to fund-raising," says Bennett Weiner, chief operating officer of the Better Business Bureau's Wise Giving Alliance (www.give.org), a watchdog organization that collects and posts information about the business practices of charities. If the organization's Web site does not offer financial information, call and request financial statements and an annual report; all nonprofit groups are required to provide such documents to the public.

Look for full contact information on the charity's site, including a street address, e-mail links, phone numbers, and names of principals. Make sure the site includes a privacy statement, including an opt-out feature if you don't want to be contacted later. If the site accepts donations online, make sure it has 128-bit encryption.

A great source of information on charitable organizations is the Wise Giving Alliance's charity reports index (www.give.org/reports/index.asp), which offers detailed individual reports on hundreds of charities and nonprofit organizations. The Council of Better Business Bureaus, in affiliation with the Wise Giving ▶

ON YOUR SIDE

A Camera From the Gray Market?

I ORDERED AN Olympus Camedia C-3040 Zoom digital camera from Broadway Photo (www.bwayphoto.com). The camera came with a video-out connector that is incompatible with electronics in the United States, meaning I couldn't view photos on my TV. I asked Broadway Photo for a replacement, but a rep refused.

Roland Houser, Redding, California

***PC World* responds:** Houser believes he got a gray-market camera—an item manufactured abroad and imported into the United States without the trademark holder's consent. Olympus says that such products don't carry a U.S. warranty and may not meet FCC standards. The sellers of such goods may be subject to penalties. Broadway Photo general manager Mark Sanders says his company replaced Houser's camera with the same model containing the correct connector. If you receive a product not intended for the U.S. market, you have 20 days to request a refund.

—Grace Aquino

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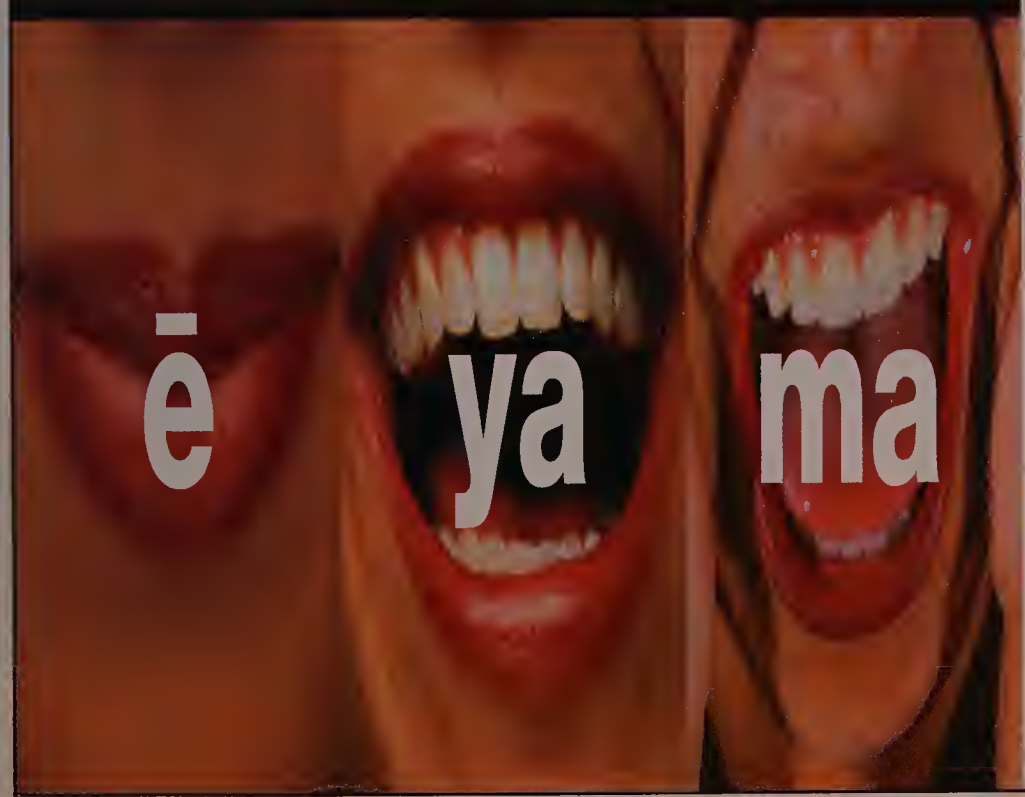

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Alliance, has developed a 23-item list of Standards for Charitable Solicitations (www.give.org/standards/cbbbstds.asp), which is intended to "promote ethical practices by philanthropic organizations." The list covers such areas as how accountable an organization is to the public and how it raises and uses funds. Each report listed in the charity index includes an evaluation of whether the organization meets CBBB standards (when a group falls short, the report explains why).

You can also find detailed financial information—including data on revenues and expenses and copies of IRS Tax Form 990—at www.guidestar.com for each of the more than 700,000 IRS-registered nonprofit organizations. While the information can be dense, GuideStar provides a primer on how to read and interpret its reports, including Tax Form 990.

The American Institute of Philanthropy (www.charitywatch.org) grades participating charities from A to F, based on the amount the organization spends on charitable programs versus fund-raising and administrative costs. The site also issues warnings about reported charity scams and misuse of funds.

If you're tempted to give to a charity you've never heard of, here are a few other tips to keep in mind:

◆ Be very suspicious of spam requests for donations. Few legitimate charities seek contributions through unsolicited e-mail.

◆ If you do respond to an e-mail solicitation, be wary of internal links. If the link says it will take you to the United Way, for instance, make sure you end up at that organization's site and not at a look-alike site set up by scammers.

◆ Beware of copycat charity names. A common trick of charity scammers is to come up with names that sound similar to well-known, legitimate charities. For example, scammers might set up shop under the name Red Cross of America, hoping to draw donors who mistake them for the legitimate American Red Cross.

◆ Be wary of vaguely worded appeals that don't provide specific information about what the charity does.

◆ If you have any doubts about an organization's legitimacy or solicitation practices, contact your state attorney general's office (there is a directory of these at www.naag.org) to find out whether the charity is registered and licensed in your state. You can file complaints with the Federal Trade Commission (www.ftc.gov), the BBB Wise Giving Alliance (www.give.org), and the National Fraud Information Center (www.fraud.org).

Of course, most charities are honorable, high-minded organizations, and your contributions really can help make the world a better place. So this holiday season, give generously—but wisely. ■

Anne Kandra is a contributing editor, Grace Aquino an associate editor, and Andrew Brandt a senior associate editor for PC World.

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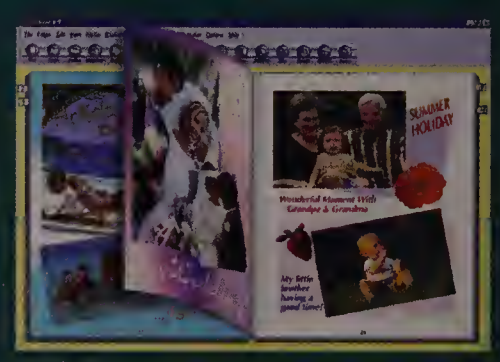

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* Growth figures represent a ten-year period ending 2008. Source: National Industry-Occupation Employment Matrix, a publication of The U.S. Bureau of Labor Statistics.

** All salary information is based on the *Occupational Outlook Handbook*, a publication of the U.S. Department of Labor. Individual student earnings vary.

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WEB SAVVY

BRAD GRIMES

Forgot Your Site Password? Just Yodlee

Stop logging in to multiple sites and start viewing your Web life in one place.

THE MOST INFURIATING words in Web surfing are "Invalid user ID or password. Please try again." So you try again, and again. Was it the ID you remembered wrong, or was it the password? Finally the Web site locks you out because it thinks you're a security hazard to yourself.

In my early days online, I tried to use the same ID and password at every site I joined. But that didn't always work (and probably wasn't wise). Some sites required numbers in the middle of passwords. Other sites wouldn't accept the punctuation I used. Internet Explorer offered to remember my ID and passwords for me, but given IE's record of security holes, I declined the invitation.

These days I regularly botch Web sign-ins. It's no big deal at The New York Times online: I just sign up again with a new ID and password. But lately I've entrusted more of my life to the Web. I pay bills there, track frequent-flier miles, and invest through multiple brokers. I can't afford to forget these passwords, yet they're the hardest to remember.

I've tried several free downloads to manage passwords, such as Passwords Plus and Whisper 32. But many of these programs are little more than databases that hold your info and let you copy and paste it into log-in screens. Several online services are designed to remember your IDs and passwords. But with so many Web sites going out of business, I'm not sure these are a good long-term option.

Then I discovered Yodlee. Besides remembering IDs and passwords, it aggregates data from other sites that you use. You can sign up for it free at www.yodlee.com or through any of the major Web sites that rebrand the service, such as American Express, Quicken.com, and Yahoo Finance. I signed up for my online bank's version of Yodlee.

Using the bank's Yodlee-powered service, I enter the IDs and passwords for my important Web destinations once, and it logs in to those sites to retrieve up-to-date data like bank balances, frequent-flier miles, and bills due. Yodlee gets this info only with my permission.

It displays all the data in one place. But if I want to go to one of those sites, I just click a button; Yodlee whisks me there and automatically logs me in. I have programmed every Web site I care about—from the one carrying my credit card information to the one handling my Web-based e-mail account—into my Yodlee service. And I can view my EBay auctions, Amazon shipments, Expedia reservations, and New York Times headlines on tabbed pages through my bank's site.

Is Yodlee secure? The people at Yodlee assured me that they use every known security measure from data encryption to intrusion detection to protect their servers. And if I leave my PC for 10 minutes, the service logs me out to prevent anyone from rifling through my accounts. Major firms like America Online, J.P. Morgan Chase, and Fidelity Investments offer Yodlee to their users, so the service will probably be around for a long time.

I've tried many ways to keep track of all my online passwords, and nothing is perfect. But for my truly important online accounts, Yodlee is a terrific tool. ■

Contact PC World *Contributing Editor Brad Grimes at websavvy@pcworld.com.*

GIMME FIVE

Web Shopping for the Holidays

RedEnvelope: Eye-pleasing site with excellent service and online chat offers a wide variety of classy gifts, from baby toys to cocktail glasses. www.redenvelope.com

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Keyboard Gets Thumbs Up

Seiko's ThumBoard speeds data entry with its QWERTY-style keyboard and is rugged enough for any road warrior.

Palm Handhelds or Handspring Visors may be more powerful than some PDAs, but you can't beat a miniature keyboard for cranking out important messages quickly and accurately.

Unfortunately, until recently, most handheld users have had to sacrifice speedy data entry to use the powerful applications supported by Palm OS computers.

"With Graffiti [Palm's handwriting language], it's hard to write fast and be precise at the same time," says Stokely Marco, product development director at Seiko Instruments Austin Inc. "And on-screen keypads are only good for hunt-and-peck data entry; they can be even more tedious than Graffiti."

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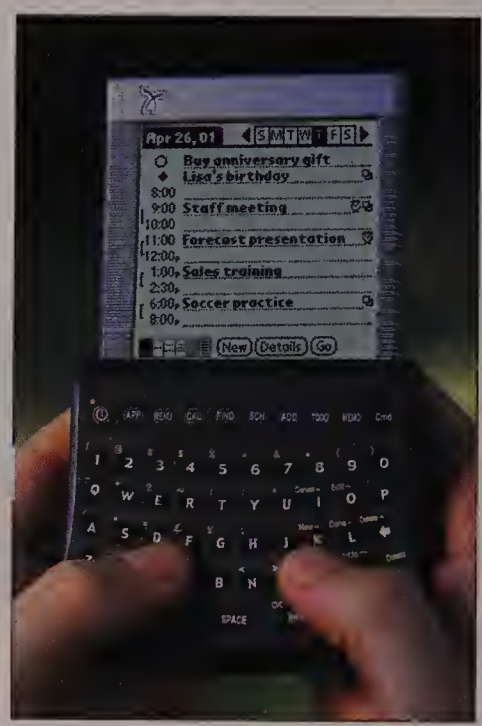
Seiko last year set out to create a Palm and Visor accessory that would eliminate the frustrations many users have with Graffiti—like slow data entry and inflexible rules for drawing characters—so businesspeople could take better advantage of their e-mail and note-taking applications.

Marco's product development team took its inspiration from a popular PDA that already includes a miniature QWERTY keyboard.

"We thought Palm and Handspring Visor users deserved an input tool that was as smart as the one on that PDA," Marco says.

Seiko ThumBoard incorporates a QWERTY-style keyboard that slides over the bottom of most Palm and Handspring Visor handheld computers, "balancing ease of use with ruggedness and portability," Marco says.



>> The ThumBoard slides over the bottom of most Palm and Handspring Visor PDAs, and makes input a breeze.

Compact and Capable

ThumBoard users hold the keyboard-handheld PC combination in their hands, and type with their thumbs. Unlike other keyboard attachments, the ThumBoard doesn't require a flat surface to work properly.

Seiko is calling the ThumBoard a "leave-on" keyboard—even with the ThumBoard attached, most handhelds will still fit into a shirt pocket. And the ThumBoard's sturdy engineering and construction ensures that the keyboard-handheld PC combination stays together, even after getting tossed around in a briefcase.

"The keyboard covers the Graffiti part of the handheld," explains Marco, "and locks into the device's serial interface. You can pretty much hold the handheld upside down by the keyboard, and it won't fall out."

Tension springs within the ThumBoard keep it firmly connected to the handheld's serial port, yet users can pull the handheld away easily for HotSync synchronization.

As for Graffiti, Seiko's own time trials found that first-time ThumBoard users can input text up to 30 percent faster than those using Palm's handwriting language.

"And we expect that figure to only improve as users become adept at using the keyboard," Marco says.

ThumBoard users should not have a hard time getting up to speed. With its traditional QWERTY layout, power and primary application buttons, and 30 brightly marked, highly accessible character keys, ThumBoard should help users write longer e-mails and letters with greater ease.

Each version of the ThumBoard is designed to match perfectly the Palm or Visor for which it was made; yet none weighs more than two ounces.

With Seiko's ThumBoard, Palms and Visors are likely to replace notebook PCs, especially for highly mobile business users.

"People are starting to carry these devices everywhere instead of laptops," Marco says. "But they expect almost the same level of functionality. The ThumBoard makes it possible for PDAs to work more like full-feature computers."

STEVE BASS

A Windows XP Upgrade in Your Future?

The OS may require more time, money, and hardware than you think.

IT TOOK LONGER to write my Windows XP column than I thought it would. I spent too much time playing with the new operating system. But even though many of XP's new features make my PC easier to use, the OS's intrusive and draconian activation process makes it impossible for me to recommend to everyone.

I upgraded a Windows 98 SE system that was networked to another PC via SOHOware's BroadGuard DSL router. First problem: No access to the Internet or to the network. My Belkin USB-to-ethernet adapter, which was happy with Windows 98, refused XP's advances. (XP helpfully suggested I go online for new drivers. Some things never change.)

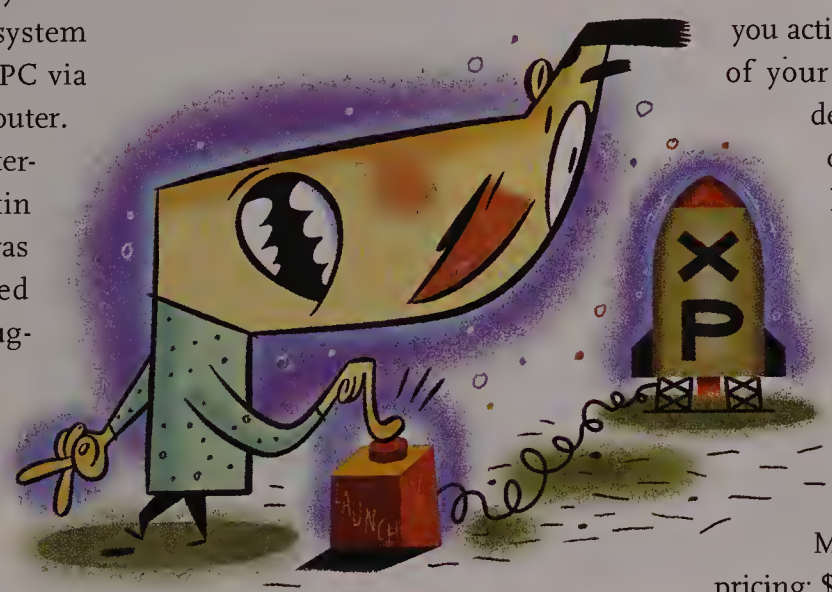
I had to buy a new network card because XP offers only limited support for—pardon my French—NetBEUI, the networking protocol used by the PC I was connecting to. Networking the PCs took a day of futzing with parts, rebooting the systems, and consulting with Microsoft.

My Turtle Beach sound card needed new drivers as well, and I had to reinstall Outlook 2000. Three utilities required an upgrade, and while Ventura Publisher—critical to the creation of my users group newsletter—wouldn't run at all under XP, my ancient DOS apps worked fine.

GOOD-LOOKING AND RELIABLE

THERE ARE TWO THINGS I really like about XP (and folks, they're dramatic): its stability and its interface.

XP allowed me to watch two humongous video files simultaneously on a two-year-old, 648-MHz AMD processor–based PC with 128MB of RAM, while I had 19 other programs running (happily, I might add). XP wasn't even breathing hard. This remarkable stability is one of many features XP inherited from Windows 2000. Once I completed the invasive Product Activation process (more on that tale of woe later), programs rarely crashed, and the blue screen of death was nonexistent.



It's not that apps never self-destruct. Instead, XP is able to stop such events from bringing down your system. Pressing <Ctrl>-<Alt>-<Delete> opens the Task Manager, which lets you safely close misbehaving programs and monitor system performance, among other operations.

XP's interface is a fantastic time-saver. For instance, the Start menu's logical organization makes navigating between apps easy. Customizing the interface is also a snap; for example, you can move most of your icons from the desktop to the Start menu for quicker access.

SHOULD YOU GET XP?

WINDOWS XP has been out for a while now, and you may be on the fence about upgrading. I wish I could give you a definitive thumbs-up or thumbs-down, but the thing that has me worried about XP is Product Activation, a scheme to foil software pirates by limiting the number of times XP can be installed.

If you don't get in touch with Microsoft by phone or the Internet within 30 days of installing it, XP stops working. Period. That sends chills down my spine. When you activate XP, it takes a "fingerprint" of your system, and if the OS later decides you've changed too many of the system's components, you have to re-register. What's next, mandatory annual fees? Check out last month's Windows XP review at find.pcworld.com/15200 for another perspective on this and other XP issues.

As proof that evolution *can* go in reverse, the geniuses at Microsoft decided on chutzpah pricing: $199 for the full version, and $99 for an upgrade. While the Family License program offers a discount of roughly 10 percent on later purchases, my wife's PC probably won't get eXPerienced.

If you're the only one using your PC, it doesn't crash often, and it runs just a few programs, stick it to Bill, save $100, and ignore Windows XP.

On the other hand, if you frequently troubleshoot a crash-prone PC running Windows 9*x*, XP should improve its performance. XP also lets multiple users easily share one PC and customize their preferences and desktops in user profiles.

For more on my travails with XP, visit www.pcworld.com/bass_letter to sign up for my Home Office newsletter. ■

PC World *Contributing Editor Steve Bass runs the Pasadena IBM Users Group. He can be reached at steve_bass@pcworld.com.*

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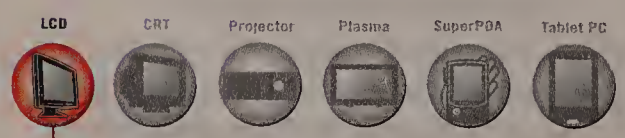

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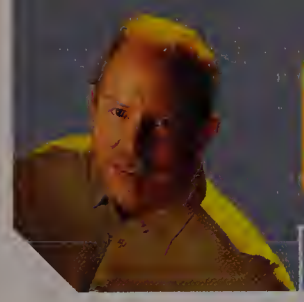

BUGS & FIXES

STUART J. JOHNSTON

Microsoft Office Causes More Trouble

Find fixes for the latest problems with Office XP, Word 2000, and Excel 2000.

GOT OFFICE XP? If you're using Microsoft's latest office suite, you know all about the activation process. Lots of people are annoyed at having to activate Office XP in the first place. As if that weren't bad enough, there's also a problem with the Activation Wizard. Here's how the process works: The wizard retrieves an authorization code so it can activate the product. (You can do this online or by calling Microsoft.)

You don't have to set the wizard in motion immediately—you can launch Office programs a total of 50 times without activating it. But when those 50 chances are up, you can't use Office XP unless you run the wizard. (Visit find.pcworld.com/15140 for more details on the Activation Wizard.)

If you choose to activate over the Internet, you type in your Office XP product ID (a string of numbers on the CD). The wizard then connects to Microsoft's server to validate the number, at which point you should get the following message: "Please wait while the wizard initializes..." Unfortunately, the Activation Wizard can freeze and leave you hanging. The problem? The wizard needs certain script files to do its job. If those files are missing or damaged, the wizard stalls. The crucial files may have gotten corrupted, or you might have deleted them by accident. Files can become corrupted in various ways. For instance, they can be damaged by viruses or by system crashes. Another potential source of trouble: Bad sectors on your hard drive can render parts of the files unreadable.

To get the Activation Wizard back on track, according to Microsoft, you should update the script files by applying a patch. Visit find.pcworld.com/15001 for a link to the download (make sure you select the right version based on your machine's operating system). Jump to find.pcworld.com/15040 for additional details on the activation problem itself. Finally, if the patch doesn't work, you can activate Office XP over the phone by calling Microsoft at 800/836-8282. In the meantime, you can continue to use the suite—as long as you haven't reached your usage limit.

NO CAN DO: WORD AND EXCEL

A SEPARATE SNAG has arisen recently in Microsoft's Office 2000 family. Some people, Microsoft says, have problems getting Word 2000 and Excel 2000 to run.

If your computer returns "out of memory" error messages when you attempt to open Word 2000 or Excel 2000, you may have a corrupted Office application file. (You can't overlook this problem, because neither program will load.) The diagnosis: One or more files needed by Word or Excel are damaged and cannot run.

The files in question are Mso9intl.dll, Msohelp.exe, and Msoffice.exe. Microsoft recommends that you rename all three files and then run Office Setup to reinstall Office 2000 and replace the corrupted file (or files) with clean copies. Visit find.pcworld.com/15000 for the set of instructions. ■

Stuart J. Johnston is a contributing editor for PC World.

BUGGED?

FOUND A hardware or software bug? Tell us about it via e-mail at bugs@pcworld.com.

IN BRIEF

Many Problems With Netscape 6.1

ARE YOU running into error messages while installing Netscape 6.1? At the time of this writing, Netscape offers fixes for this common problem and for three others. Visit find.pcworld.com/15002 to see the solutions. Netscape also posted a very long list of additional "known problems" with Netscape 6.1. Head to find.pcworld.com/15003 for the complete list.

Weird Audio on Compaq Deskpros

IF YOUR favorite rock band sounds like Alvin and the Chipmunks on your Compaq Deskpro, you may have run into a common problem with these systems. Compaq says that users who upgrade to Windows Me from Windows 98 (original or Second Edition) on its Deskpro EN series and on some Deskpro EX series machines may find that their MP3 files play back too fast. If Tom Waits suddenly sounds like Betty Boop, you need to obtain Compaq's patch. Visit find.pcworld.com/15004 for the full rundown of the problem and a link to the download.

On the Phone, Online, and On Site: An IT Pro's Best Friend

PC Connection puts IT all together for mid-sized businesses

Mid-size businesses share a common problem. They need to leverage the power of information technology to better serve customers, but they often lack the internal resources to deal with sophisticated and at times finicky hardware, software and, especially, networks.

To make matters more difficult, many of today's business information systems are built using products from multiple vendors. Hiring the right mix of IT support people—if you can find them at all—to exploit these so-called hybrid systems can be prohibitively expensive and time-consuming.

That's why so many mid-sized companies are turning to partners for help managing vital IT resources. With a wealth of know-how earned over 20 years in business, PC Connection specializes in helping IT professionals build and manage scalable, multi-vendor IT systems.

As IT and purchasing managers in all industries have found, working with PC Connection means having instant access to a broad and deep team of technology professionals capable of sweating any IT details.

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On the phone, online, and on site

What's more, PC Connection has a nationwide network of on-site service providers who travel to the customer's facility to help with system planning, installation, and integration. On-site teams work in concert with each client's PC Connection account manager and technology consultants to ensure that environmental conditions are fully considered during planning and implementation.

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PC Connection can configure all hardware on its premises. They specialize in broad deployments of desktops, notebooks, and servers to multiple remote locations (with overnight delivery for anything ordered by midnight EST). By imaging hard drives and asset-tagging hardware before shipment, PC Connection can dramatically lower the total cost of system ownership. Bottom line: By partnering with PC Connection, customers can deploy technology solutions faster, and reap the business rewards more quickly as well.

Of course, companies working with PC Connection also reap the benefits of lower costs gained by dealing with one of the largest direct dealers of information technology in the world. This value is part of the reason *PC World* magazine has cited PC Connection nine times as a winner of its World Class Awards.

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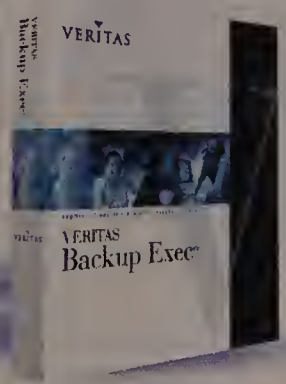

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NEW PRODUCTS

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Get Organized: PDAs for Any Budget

PDAs

PALM OR POCKET PC? It's a question that anyone in the market for a new palmtop must face. Today, new models from Handspring and Toshiba make the decision that much tougher, and Casio also weighs in with an economical color-screen PDA that relies on an old standby OS.

VERSATILE VISORS

IF YOU'RE SHOPPING for an easy-to-use organizer at a reasonable price, a monochrome device based on the Palm OS remains your best bet. Handspring's new **Visor Neo** and **Visor Pro** stand as strong contenders, though they improve on existing models only to a modest extent. The $199 Neo, with its 8MB of memory, is essentially a zippier Visor Deluxe (its CPU runs at 33 MHz, in contrast to the Deluxe's 16 MHz) with a better display (16 shades of gray instead of 4). Oh, and it's available in a trio of trippy, translucent new colors: smoke, red, or blue.

Meanwhile, the silver-cased Visor Pro offers all the Neo's benefits together with double the Neo's memory. The $299 Visor Pro also has a built-in rechargeable battery, which eliminates the need for AAs.

HANDSOME new Handsprings: the Visor Neo (left) and the Visor Pro.

Both the Neo and the Pro sport Handspring's Springboard slot—a boon because modules are made for everything from MP3 music playing to wireless Web access.

The weak backlights of the Neo and the Pro offer little help in dim environments, and their pop-off covers seem easier to lose than to use. Neither model comes bundled with the leather slipcase that accompanies the Visor Deluxe.

Even so, the Neo is the best entry-level, Palm OS–based unit currently on the market, and its specs easily outshine those of the $149 Palm M105. The pricier Pro is most attractive if you plan to stuff your palmtop with programs and data—it can hold the equivalent of 35 copies of *Great Expectations*. But if you're willing to invest $300 or more in a monochrome PDA, I recommend looking at a couple of sleeker 8MB handhelds, too: the $299 Handspring Visor Edge and Palm's $329 M500.

CASIO CONTENDER

ALTERNATIVELY, you could spend about $300 on Casio's **Cassiopeia Pocket Manager BE-300**, which relies on Microsoft's Windows CE operating system, the creaky precursor to today's Pocket PC OS.

For $299, the BE-300 offers a remarkable array of features,

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Arkon Networks Parafone

76 TRIP-PLANNING SOFTWARE
DeLorme Street Atlas USA 9, Microsoft Streets & Trips 2002

PDA MODULE
Margi Systems Presenter-to-Go

77 NOTEBOOK
Toshiba Portégé 4000

78 PC UTILITY
PowerQuest PartitionMagic 7

including bundled software for e-mail, personal information management, Web browsing, MP3s and audio books, and photos and videos—as well as a respectable color display. It's one of the few handhelds with a handy flip-up cover, and it has a CompactFlash slot for more memory and other add-ons. (That's a necessity, since the included 16MB of memory is exceedingly skimpy for pictures, videos, or tunes.)

Unfortunately, the BE-300 has more than its share of rough edges: Its handwriting recognition couldn't cope with my scrawls, and both its built-in applications and its PC synchronization software lack polish. I spotted some typos in the user interface, and the PC-based video-conversion software crashed when I tried to convert QuickTime movies.

On top of that, this PDA is powered by Windows CE and doesn't run applications written for the Pocket PC or Palm OS. Although third-party software written for the OS is available, this PDA is certainly less versatile than its rivals. Hey Casio, listen up: Give the device better software, and you will have a real winner.

TOP-LINE TOSHIBA

IN CONTRAST, the $569 Toshiba **Pocket PC E570** offers the full-blown Pocket PC experience, with all its virtues and vices. Like Pocket PCs from Casio, Compaq, and HP, the Pocket PC E570 boasts a high-resolution color screen and low-calorie versions of Word, Excel, Internet Explorer, and other Microsoft apps, giving it the feel of a squooshed-down notebook PC. It also doubles as a capable electronic-book reader, voice recorder, and MP3 player, though its 64MB of memory holds only a moderate number of tunes.

Compared with its Pocket PC competitors, the sturdy-feeling Pocket PC E570 provides impressive expandability: Despite being trim enough to slip into a pocket, it comes with both CompactFlash and Secure Digital slots for memory, modems, and more.

The screen is front-lit, so it remains visible outdoors even in bright sunlight. But like other front-lit PDA displays, the Toshiba suffers in typical indoor settings. One other minor quibble: The door that shields the slots leaves one slot a bit unprotected. (I stuck the PDA in my pocket, and a quarter lodged in the SD slot.)

Ultimately the Pocket PC E570 is defined more by Microsoft's software than by Toshiba's hardware. The Pocket PC 2002 OS packs plenty of power, but under an interface that lacks the elegance and efficiency of Palm's sensible but less-ambitious alternative. Gadget lovers should consider Toshiba's Pocket PC E570 along with other Pocket PCs; casual users will likely be happier with the greater simplicity of either the Visor Neo or the Visor Pro—and with their substantially lower price tags.

—Harry McCracken ▶

CONTRASTS: A $569 Toshiba (left) and a $299 Casio.

Cassiopeia Pocket Manager BE-300
Casio
★★½☆☆
Color screen and a budget price offset by crude software.
List: $299
find.pcworld.com/15340

Visor Neo
Handspring
★★★★☆
Speed, good monochrome screen, and expandability make for a strong entry-level PDA.
List: $199
find.pcworld.com/15321

Visor Pro
Handspring
★★★½☆
Midrange model comes with a rechargeable battery and 16MB of memory; a bit pricey.
List: $299
find.pcworld.com/15520

Pocket PC E570
Toshiba
★★★½☆
Highly expandable, mostly well-built Pocket PC; its screen is a bit dim when used indoors.
List: $569
find.pcworld.com/15320

Compact 3-Megapixel Sharpshooters

DIGITAL CAMERAS

"SMALL AND CRAMMED full of features" seems to be the design mandate for many of the latest digital cameras, including the Nikon **Coolpix 885** and the Pentax **Optio 330**. Each of these 3-megapixel shipping models slips easily into a shirt pocket and will please both the casual shutterbug and the more advanced photographer.

A MULTITUDE OF MEGAPIXELS from the Pentax Optio 330 (left) and the Nikon Coolpix 885.

COOL UPGRADE

THE $600 COOLPIX 885 has handy features, including a noise-reduction mode to minimize blemishes; a camera button for uploading images to a PC; a threaded lens rim for attaching an optional Nikon lens (such as wide angle or telephoto); a 16MB CompactFlash card for image storage; and a 3X optical zoom lens.

The Coolpix 885 also produces decent-quality snapshots. It delivered attractive color and great skin tone in several of my photographs. Some of the images that I took outdoors, however, appeared murky on screen. In several cases, the camera lost elements of background detail and produced a few dark areas.

The 885 also retains some of the shortcomings of its immediate predecessor (the Coolpix 880), such as a disappointingly short-lived disposable lithium ion battery, the inability to record audio and video simultaneously, and a complicated menu system that practically necessitates having the manual in your pocket at all times.

EASY ELEGANCE

FOR AN EASIER-TO-USE—albeit costlier—camera, consider the $699 Pentax Optio 330. It combines a sensible menu structure and on-camera buttons (such as a four-point dial next to the LCD screen, similar to the Coolpix 885's) for easy menu navigation and setting adjustments. It looks more elegant than the Nikon as well, thanks to a brushed-metal finish and slim design.

In my tests, the Optio delivered bright, color-rich photos, though it lost some detail in one of my outdoor shots. The camera comes with several of the same handy features the Coolpix 885 offers, but it has one of the Nikon's drawbacks, too: It records only short video clips without audio.

Unlike the Nikon, the Pentax is bundled with a rechargeable, proprietary lithium ion battery and a charger, making it a reasonable value. (Nikon's optional battery kit is $50.)

With the Pentax, you also get ACDSee software, a useful digital imaging tool that lets you easily view, organize, and enhance your photos, and perform basic image editing.

BOTTOM LINE

THE PENTAX OPTIO 330 is a better value than the Nikon Coolpix 885, thanks to its included rechargeable battery and charger and its easy-to-use software. I prefer the look and feel of the Optio over the Coolpix, too. But if you want a digital camera that you can attach optional lenses to, the Nikon is the way to go.

—*Grace Aquino* ▶

Coolpix 885
Nikon
★★★½☆
Experienced users will enjoy its richly colored photos, advanced controls, optional lenses, and reasonable price.
List: $600
find.pcworld.com/15341

Optio 330
Pentax
★★★★☆
Stylish design, good-quality photos, and clear menus make it a prime (though pricey) choice for trendy shutterbugs.
List: $699
find.pcworld.com/15400

QUICK TAKES

Easy Printing From Mobile Devices

PRINTING FROM infrared-equipped mobile devices can be a nightmare, since most printers aren't built to receive infrared signals. Bachmann Software & Services' $70, pocket-size **InfraReady Adapter** is a mobile accessory that fixes this problem. You simply attach one end to the parallel port of the printer and place the integrated infrared eye where it can easily receive signals from your laptop or personal digital assistant. Of course, to make it work, you'll have to detach any cable that's already plugged into the printer's parallel port.

Because the InfraReady Adapter (which is smaller than a laptop's power cord) is battery operated, you don't need to be close to an electrical outlet to use it. The device works with Bachmann's Palm-based PrintBoy software ($35 for the Deluxe version, or $105 total with adapter; drivers are available for other setups). The price tag is a tad high, but the ability to print without cables could make it very enticing if convenience is important. InfraReady Adapter, Bachmann Software & Services, find.pcworld.com/13726.

—Michael S. Lasky

PHOTOGRAPH: MARC SIMON

Guess who's offering great deals for the holidays?

Gateway presents the best values from here to the North Pole.

There has never been a better time to get a Gateway® computer for that special someone. Even if that special someone happens to be yourself. We've got powerful desktops, versatile notebooks and every kind of accessory you can imagine. And when you consider all the support, service and training we offer, you won't find a better value. What's more, we make it easy for you to get what you need. You can visit a Gateway store near you. Shop by phone. Or simply order online. Here are just a few of the holiday deals we've put together in our workshop.

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Faster than a speeding sleigh. *If you're looking for a fast computer, check out this top of the line model featuring a sleek, flat panel display. The Gateway® 700XL is powered by a mind-blowing Intel® Pentium® 4 processor enabling you to work or play in hyperspeed. It also comes fully loaded, so you'll be prepared to handle just about anything.*

[1]Maximum data transfer rate dependent upon variables including particular modems with which you are communicating, telephone lines, communications software and communications protocols. [2]Pocket Streets for Microsoft® Windows® CE requires Windows® CE 2.0 or later. Hardware available separately. [3]TO AVOID BEING CHARGED A MONTHLY FEE, CANCEL BEFORE ONE-YEAR PERIOD ENDS. One-year period begins 30 days from receipt of system. You may incur surcharges even during promotional period for premium services, or long distance charges on your phone bill, depending on location and calling plan. Communication surcharges may also apply with some access numbers and in AK. For details and access numbers call 1-800-846-2000. Check with your local phone company to determine whether the access number you select is a local call for your calling plan. New U.S. members 18 and older only. Major credit card or checking account required. Use may be limited, especially during peak usage.

Solo 5300

Gateway 500X

Solo 1200

e best things come in small kages. *Perfect for home or office , the Solo 5300 has it all. It vers desktop-caliber performance. offers maximum versatility on road. And its thin, lightweight ign won't weigh you down. nce for ounce, this notebook't be beat.*

Stuffed with features. *The Gateway 500X offers a lot for a little. With so much power and performance, you can do everything from run the most demanding multimedia applications to play the latest digital games. And when you compare it with the competition, you'll discover this desktop stands alone.*

It doesn't have to be expensive to be good. *Just because you're on a budget doesn't mean you have to skimp. Affordable yet capable, the Solo 1200 is a smart choice for the starving student or value-minded professional who's on the go. It even offers wireless capabilities, so you'll enjoy more freedom than ever.*

olo® 1200SE Notebook

- 12.1" XGA TFT Active Matrix
- Intel® Celeron™ Processor 800MHz
- 128MB SDRAM
- 10GB Ultra ATA Hard Drive
- Integrated v.90 Modem
- Integrated 10/100 Ethernet
- Integrated 24X CD-ROM Drive and Floppy Drive
- Microsoft® Windows®XP Home Edition
- Microsoft Works Suite 2001[2]
- 1-Year America Online® Internet Access (new members only)[3]
- 1-Year Limited Warranty[4]
- $999[5]

Solo 5300CL Notebook

- 14.1" XGA TFT Active Matrix
- Intel Pentium® III Processor 900MHz
- 128MB SDRAM
- 10GB Ultra ATA Hard Drive
- Integrated v.90 Modem
- Integrated 10/100 Ethernet
- Modular 8X DVD-ROM Drive and Floppy Drive
- Microsoft® Windows®XP Home Edition
- Microsoft Works Suite 2001[2]
- 1-Year America Online Internet Access (new members only)[3]
- 1-Year Limited Warranty[4]
- $1,499[5]

Gateway® 500X Desktop

- Intel Pentium 4 Processor 1.70GHz
- 15" Flat Panel Display (15" viewable)
- 256MB SDRAM
- 40GB Hard Drive
- Recordable/Rewriteable CD-RW & DVD Drive
- Boston Acoustics® BA735™ Speakers with Subwoofer
- 56K Modem[1]
- Integrated 10/100 Ethernet
- Microsoft® Windows®XP Home Edition
- Microsoft Works Suite 2001[2]
- 1-Year America Online Internet Access (new members only)[3]
- 1-Year Limited Warranty[4]
- $1,499[5]

Gateway 700XL Desktop

- Intel Pentium 4 Processor 2.00GHz
- 15" Flat Panel Display (15" viewable)
- 512MB RDRAM
- 80GB Hard Drive
- Recordable/Rewriteable CD-RW & DVD Drive
- Boston Acoustics BA7500™ Speakers with Subwoofer
- 1394 IEEE PCI Card
- 56K Modem[1]
- Integrated 10/100 Ethernet
- Microsoft® Windows®XP Home Edition
- Microsoft Works Suite 2001[2]
- 1-Year America Online Internet Access (new members only)[3]
- 1-Year Limited Warranty[4]
- $2,629[5]

AOL Keyword: Gateway

Take digital photos of friends and family.
Gateway Photo:)Ware™ Picture This! Photo Solution $350.[5] This all-in-one package makes it possible to take photos on your new digital camera, download them to your Gateway PC, and then print them on premium Kodak™ photo paper. It's that easy.

Play your favorite holiday tunes on your PC.
Gateway Music:)Ware™ CD Creator Pack $135.[5] (at time of purchase). Make your own CDs and get everything you need to become a digital-music mix master—from the latest music software to a pack of 50 CD-R media disks.

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http://www.microsoft.com/piracy/howtotell

mited warranties and service agreements apply; visit gateway.com or call 1-800-846-2000 for a free copy. [5]Prices and configurations subject to change without notice or igation. Prices exclude shipping and handling and taxes. ©2001 Gateway, Inc. All rights reserved. Gateway Terms & Conditions of Sale apply. Gateway.com and Gateway untry Stores, LLC are separate legal entities. Gateway, the Gateway Stylized Logo, the Black-and-White Spot Design and Solo are trademarks or registered trademarks of teway, Inc. in the U.S. and other countries. The Intel Inside Logo, Intel and Pentium are registered trademarks and Celeron is a trademark of Intel Corporation or its sidiaries in the United States and other countries. Microsoft and Windows are registered trademarks of Microsoft Corporation. America Online and AOL are registered vicemarks of America Online, Inc. Ad code: 007018

Sixteen years ago, Gateway started on a cattle farm in Iowa. Our consistent ability to deliver state-of-the-art technology, incredibly affordable prices and top-notch customer service has helped us become the fourth largest computer company in the country. Today, with nearly 300 stores nationwide to serve you, Gateway makes it easier to buy, service and learn about technology than ever before. Quite simply, there is no company better suited or more committed to helping you meet your technology needs.

Dell's 1.2-GHz Notebook Gets Down to Business

NOTEBOOK

TEST Center

DELL'S NEW $2685 **Inspiron 4100** packs a lot into one case, including Intel's latest mobile processor, the 1.2-GHz Pentium III-M. It's heavy, at about 8 pounds with AC adapter and floppy module included, but you get your money's worth for mainstream business use.

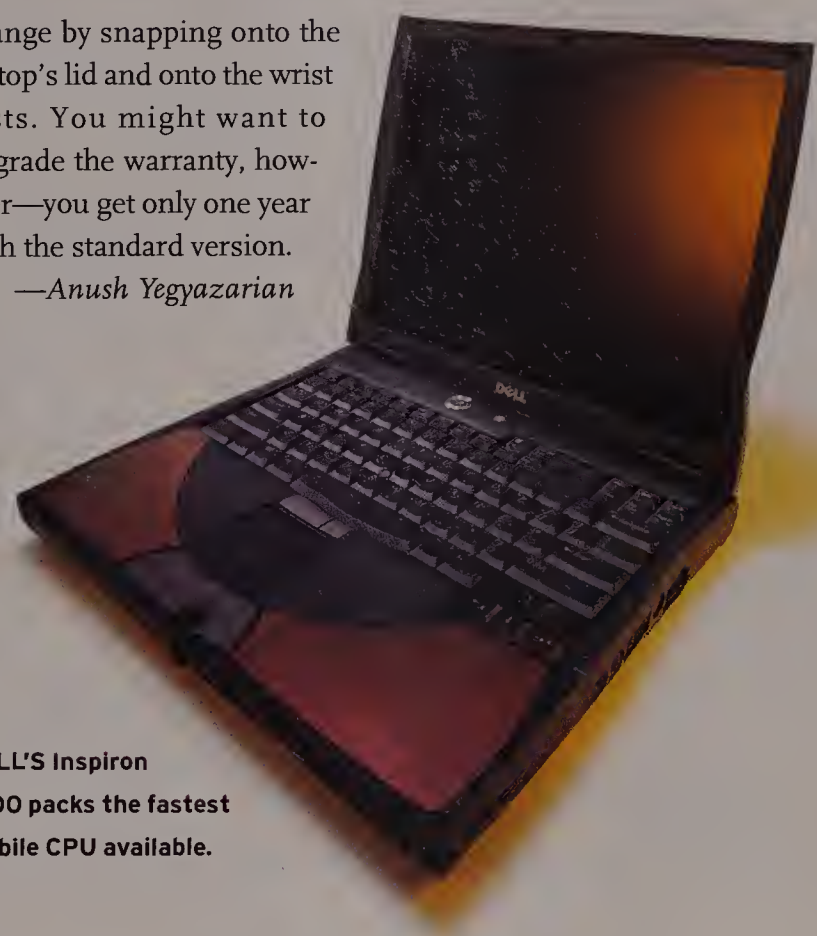
With the fastest notebook CPU available, the 4100 performed very well on our PC WorldBench 2000 tests, scoring 211. Our top-performing Windows 2000–based notebook remains the HP Omnibook 6100, with a 1.13-GHz PIII-M CPU, which scored 215. The difference would be barely noticeable during casual use. (Both systems came with 256MB of RAM.)

In our tests, the Inspiron's battery life was fair: 2 hours, 58 minutes. You can use one of its two modular bays to add a second battery.

You also get a sharp 14.1-inch LCD that has one of the highest notebook resolutions available (1600 by 1200, at 32-bit color), powered by ATI Mobility Radeon graphics with 16MB of DDR RAM. The Inspiron 4100 package also includes a fair-size 20GB hard disk, a combination 8X DVD-ROM and 8X/8X/24X CD-RW drive (hot-swappable in the dual bays, just like the spare battery), a built-in antenna for wireless networking, a touchpad, a pointing stick, a 56-kbps modem, an ethernet adapter, and Microsoft Office XP Small Business 2002. You'll need to order a mini PCI card (one of these came included with our notebook) to enable the wireless networking.

In my tests, the keyboard was comfortable and quiet, the video playback was good, and the sound was acceptable. If you like color-customizing, for $20 to $50 you can get different sets of modular colored panels you can easily interchange by snapping onto the laptop's lid and onto the wrist rests. You might want to upgrade the warranty, however—you get only one year with the standard version.

—*Anush Yegyazarian*



DELL'S Inspiron 4100 packs the fastest mobile CPU available.

Inspiron 4100
Dell
★★★★☆
A good business machine with a great screen and all the features you could ask for built-in, but you might want better battery life and a longer warranty.
Street: $2685
find.pcworld.com/15422

User-Friendly CD-Burning Software

CD SOFTWARE

NEW CD-BURNING programs from Iomega and SmartDisk both try hard to be consumer friendly. The difference? Iomega targets general-purpose users, while SmartDisk aims squarely at people who want to create CDs filled with digital audio, video, and images.

Iomega's $30 **HotBurn** sticks to the basics, with three burning options (music CD, data CD, copy CD) plus an integrated CD-label designer to handle liner notes, covers, and labels. Step-by-step screens walk you through each task. You can easily add files to a project, thanks to a direct link to Windows Explorer—just drag-and-drop files to HotBurn. While HotBurn streamlines the process for novices, experienced users will quickly become frustrated by its limited options. I looked at a beta copy; the software is available only via download from the company's Web site.

Meanwhile, SmartDisk's innovative package, **SmartDisk MVP**, is a terrific CD-burning program that nicely complements the software that comes standard with CD-RW drives. You can use SmartDisk MVP to create a music or video CD (or to mix files together to generate a video CD with picture slide shows and music). Plus, you can use it to write data to CD-R. Thumbnails are equipped with a viewer/player that permits you to preview your selection.

The $70 software is fairly resource hungry, however. The shipping version sometimes caused my 1-GHz Athlon-based PC to churn prior to creating a CD. SmartDisk attributes this to the intensive processing required for converting files before burning a disc. Otherwise, SmartDisk MVP is excellent for turning your CD-RW drive into a more creative and productive tool.

—*Melissa J. Perenson* ▶

Iomega HotBurn
Iomega
(Beta software, not rated)
Its stripped-down CD-burning interface makes this software a viable option for beginners.
List: $30
find.pcworld.com/15421

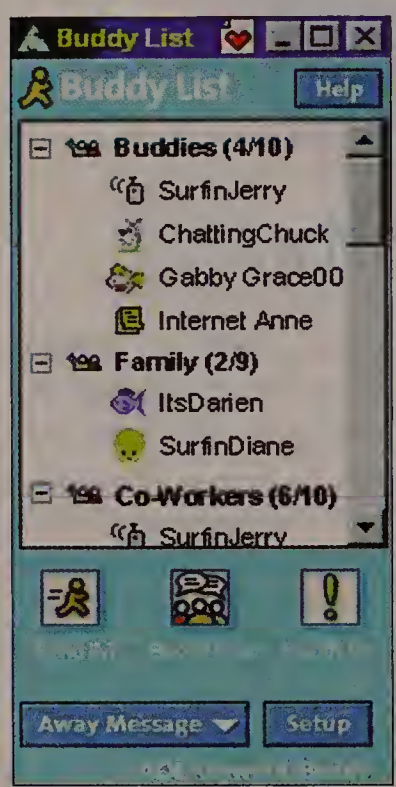
SmartDisk MVP
SmartDisk
★★★★☆
Really reworks the way files are organized and burned to video, audio, data, and slide-show CDs.
List: $70
find.pcworld.com/15420

Broadband Is Big in AOL 7

ONLINE SERVICE

AMERICA ONLINE'S updated interface, AOL 7, is a boon to broadband users, with new features scattered across the board. It includes upgrades for the modem crowd as well.

Gone is the Media Tower keyed to broadband users, which rose from one corner of the old interface. AOL 7's new menus are simpler, yet juiced with tightly integrated content that appears only with a high-speed connection. Broadband users now can get live and on-demand news from partners like CBS, the NFL, and Time Warner's stable of media.



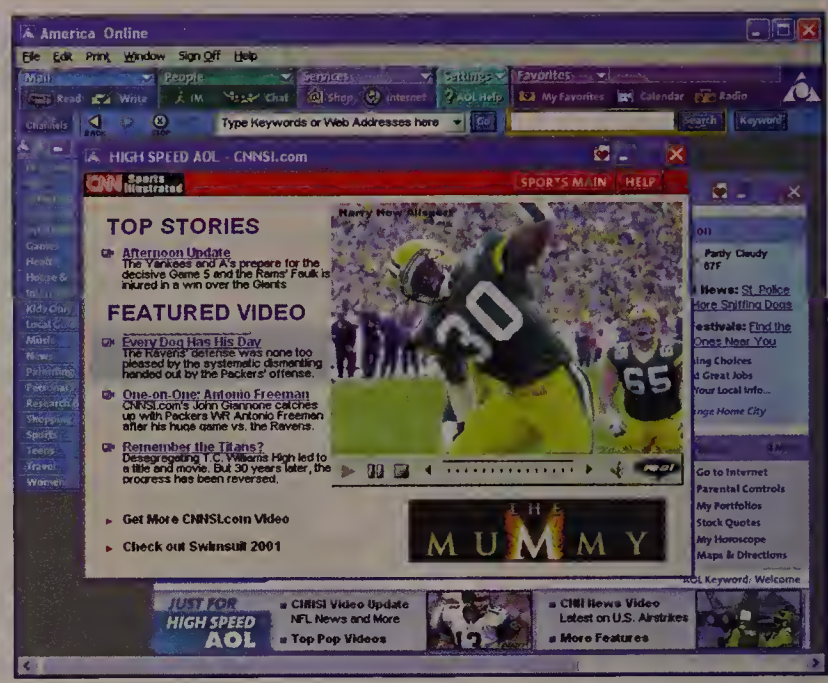
NEW PLACEMENT OF icons helps identify online buddies.

In my beta version, I also found improvements to existing features such as chat and instant messaging, plus some new interactive services. Windows XP users, take note: An AOL upgrade is probably necessary, since many versions of AOL 6 and earlier AOL releases won't run with XP. And AOL 7 gets personal—but in a good way. For example, a new AOL Weekend guide is location-based; the new AOL Box Office section, in partnership with Ticketmaster, makes it easier to buy tickets; and the interface will now customize content by postal zip code.

Visible changes include the AOL "running man" icon now appearing beside the names of e-mail correspondents who are online when you check your in-box. Along similar lines, a mobile icon indicates that an instant messenger buddy is online via a mobile device. That helps you tailor messages for a small screen.

AOL 7 pops up the closest match from your address book as you start typing a name or address in an e-mail message title. It also supports slightly bigger messages than earlier versions did, but all 63KB or larger e-mail messages I received turned into attachments I had to download separately.

The new Radio@AOL with 75 music channels is by no means unique. Most of the programming is streamed at a lower sound quality for non-broadband users. A broadband-enhanced version is in the works. The You've Got Pictures photo service has improved, however, letting you post an unlimited number of digital images on the photo-sharing section of the service.



AOL 7'S BROADBAND STRIP (bottom) guides high-speed users to content geared specifically for them. Dial-up users don't see the strip.

Microsoft has announced an update to its MSN Web portal, revamping the look—adding content and Internet-based tools, and expanding broadband access options—making it clear that it's aiming for AOL's consumer audience. AOL can't afford to rest on its laurels—and with the debut of AOL 7, it isn't.

—*Tom Spring*

AOL 7
America Online
(Beta service, not rated)
A good upgrade for dial-in users and a must for broadband users.
Free to AOL members
find.pcworld.com/16120

Listen to Books on a PDA

PDA MODULE

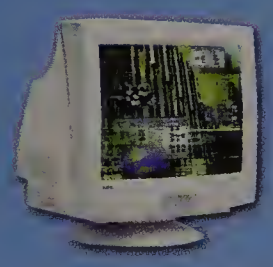
TIRED OF AMUSING yourself with MP3s? Then listen to a book on your Handspring Visor by using **Audible Advisor**, a 16MB module from Card Access and Audible.com. Once you've finished listening to a chunk of text through the included earphones, Audible Advisor automatically refreshes at your next sync, downloading new content from your book or news page.

The Advisor stores more than 4 hours of audio, and it uses but doesn't abuse your Visor's batteries. (I obtained the promised 30 hours of playback time on one set of AAs.) Audible.com offers five levels of file compression, but the Advisor supports the two that the company thinks give listeners the best experience. In my tests with material downloaded from the Audible.com Web site, I discovered that those formats yielded reasonably good sound quality on my $129 shipping module. You can get the unit for only $49 if you sign up for Audible.com's one-year Basic Listener membership, which charges $13 a month for one book a month plus some audio extras.

—*Joel Strauch* ▶

Audible Advisor
Card Access
★★★½☆
Lets you listen to audio books on your Handspring Visor; a welcome recreational alternative.
List: $129 ($49 with Audible.com membership)
find.pcworld.com/13723

PICTURE THE SAVINGS



NEC AccuSync 70 CRT 17" Monitor

$154.95

Canon CanoScan N670U Flatbed Scanner

$87.95

Nikon COOLPIX 995 Digital Camera

$739.95

HP LaserJet 1200 Printer

$382.95

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computers software electronics wireless books music games video dvd clearance

Digital Music: The Player's the Thing

LARGER DEVICES from Sonicblue (left) and CMC Magnetics.

MP3 PLAYERS

PORTABLE MP3 players used to be pretty much alike—simple pocket-size devices with built-in memory. Now models with additional features or new capabilities are available, so I looked at shipping units of new CD-based players from CMC Magnetics and Sonicblue, and at a flash memory model from Intel. All three exemplify the growing diversity of these products.

First up is Sonicblue's $180 **RioVolt SP250**, which builds on the Rio Volt SP100, the company's successful first attempt at a CD player that could also play MP3 files. The SP250 adds a smaller, yet better-organized LCD screen to view track and artist information; an FM tuner; and buttons for accessing different folders of music stored on the CD. This player can hold as many as 250 songs (depending, in part, on file format) on a typical 700MB disc, and its ample 8 minutes of shock protection keeps songs from skipping. Sound quality was excellent, and I liked the design of the 5.2-by-5.8-inch unit's controls and remote.

CMC Magnetics' **ShellStar CM220** is the first CD player to use 8-centimeter CDs, a newer size of disc about half the diameter of a conventional CD, which holds up to 185MB of content (about 35 songs) and fits in the center of regular tray-loading CD drives. Unlike the rugged RioVolt, the ShellStar's plastic case feels flimsy. But this didn't affect the sound quality of the $130 unit. Its smaller size fits comfortably in the palm of your hand and has logically organized control buttons, making it an attractive compromise between a full-size MP3 CD player and a pricey flash player. One catch: The small LCD provides song numbers only, without track and title information.

Intel's $150 **Personal Audio Player 3000**—about the size of a small pager—emphasizes flexibility. You can personalize its look by flipping up the clear plastic cover and inserting one of several included faceplates, or your own photos, which you can template with the included Audio Manager software. But in spite of its minute size and rugged feel, the player has some design drawbacks, including stiff buttons, no display of track and title information, and a poorly placed multimedia card slot. The slot, which houses flash memory to expand on the unit's 64MB of built-in storage, is hidden in the battery compartment; it is very difficult to remove the card unless you first remove the battery.

INTEL'S tiny MP3 player.

Sonicblue's RioVolt SP250 comes out ahead in this group for its versatility. For portability especially, CMC Magnetics' ShellStar CM220 or Intel's Personal Audio Player 3000 are both worth a look.

—*Melissa J. Perenson*

ShellStar CM220
CMC Magnetics
★★★☆☆
An innovative MP3 CD device that fills the bill if you are looking for an affordable, portable digital audio unit.
List: $130
find.pcworld.com/15300

Personal Audio Player 3000
Intel
★★★☆☆
This flexible player has design flaws that keep it from ranking among the best in MP3 players.
List: $150
find.pcworld.com/15301

RioVolt SP250
Sonicblue
★★★★☆
Well-built MP3-CD player with good audio, navigation features, and shock protection.
List: $180
find.pcworld.com/15161

QUICK TAKES

Turn Your Visor into a Cordless Phone

CAN'T BEAR to be parted from your PDA, but love to wander while on the phone? Arkon Networks' **Parafone** Springboard module lets you keep it all together by converting your Handspring Visor into a cordless phone. You'll pay quite a bit for the convenience, however.

The 900-MHz Parafone can make calls directly from your Visor's address book, or speed-dial any of 50 preset names with a single click. It offers the usual cordless phone abilities and range—300 feet inside, 1000 feet outside. I lost the signal at 700 feet, but an intrusive tree may have been responsible. The included headset lets you enter data into your Visor while you're connected on the phone—and helps to keep your screen clean. The sound quality of my shipping unit was good, similar to that of other 900-MHz cordless phones I've used. The module's charger base doubles as a USB hot-sync cradle for most Visor models.

Still, at $119, the Parafone makes a pretty expensive cordless phone. Is wandering worth it? Arkon Networks, find.pcworld.com/13683.

—*Joel Strauch*

PHOTOGRAPHS: MARC SIMON

SAMSUNG ELECTRONICS

SyncMaster™ your PC

753DF SAVE $40

955DF SAVE $40

760v SAVE $100

570v SAVE $30

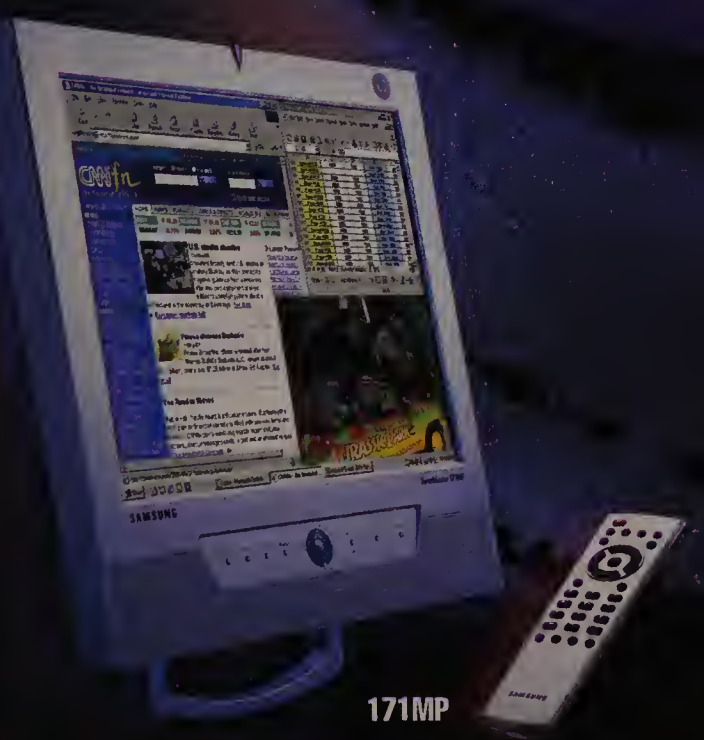
150MP SAVE $50

170MP SAVE $50

Get the system you want at a price you'll love

Save a bundle on a SyncMaster monitor when you purchase a new PC between October 1-December 31, 2001. Visit samsungmonitor.com/syncmaster or your participating retailer for details.*

Explore the possibilities



171MP

Introducing the new 171MP and 151MP

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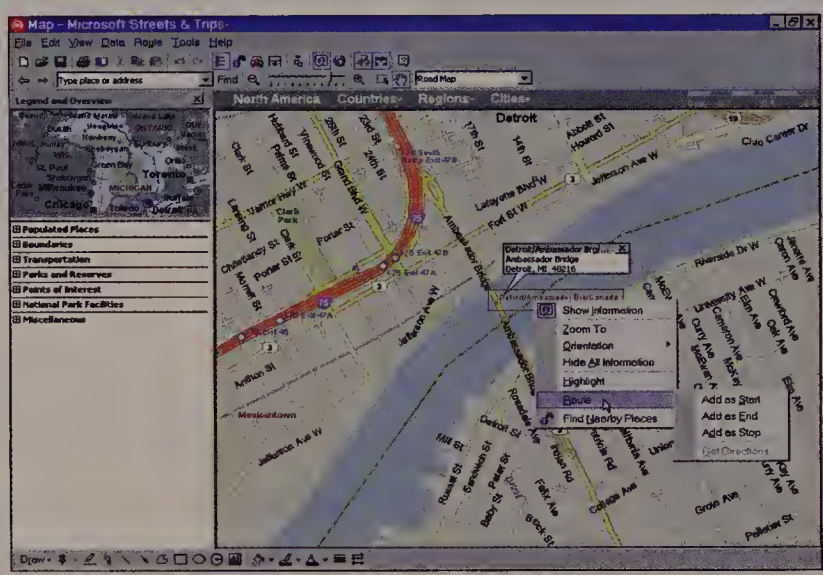
New Road-Trip Reconnaissance Software

TRIP PLANNERS NEED AN ELECTRONIC hand to hold as you plan a cross-country slog or a short drive to a neighboring locale? Try Microsoft Streets & Trips 2002 or DeLorme's Street Atlas USA 9.

NO CANADA: DeLorme's Street Atlas 9 goes blank when it's asked to describe what's across the river from Detroit, Michigan.



FULL DISCLOSURE: Microsoft Streets & Trips 2002 software can provide maps showing both sides of the United States/Canada border.

Both products work with GPS receivers and can download data to handhelds (Pocket PCs in the case of Streets & Trips, Palms for Street Atlas, though the latter also requires Solus Pro software, $50). Both also feature online updates of road-construction projects. Streets & Trips, $45, has the edge in eye appeal with a clear, polished interface. But Street Atlas, $45, adds a layer of mapping detail that can make a big difference, as I found when I used each product to plan a car journey from Peaks Island, Maine, to the Santa Monica Pier in Southern California.

To test beta versions of both programs, I started by typing a street address as my starting point and a public attraction as my destination. In a matter of seconds, both packages cooked up a complete coast-to-coast itinerary, right down to when I should stop for gas.

The default settings in each program focused on interstate highways nearly all the way, but neither package requires you to accept its quickest or shortest route. In Street Atlas, you may set preferences to avoid or favor highways, toll roads, forest roads, state routes, ferries, and local roads. You may also adjust speed preferences for each road type and show or hide map icons that identify restaurants, gas stations, and other points of interest. Click the *Along the Way* button to see a list of restaurants and services (including phone numbers but not street addresses, unfortunately) within 1, 2, or 5 miles of your chosen location.

Streets & Trips' preference settings are limited to expressing a strong preference or a strong dislike (with five settings in between) for interstates, other highways, arterial roads, and toll roads. But it does include street addresses for restaurants, gas stations, and points of interest. Both programs cover the United States; Canada is missing from the DeLorme program.

I'd give a few extra points to Street Atlas USA 9, which escorted me all the way across the country from my offshore starting point. Streets & Trips required that I start on the mainland because its planner couldn't factor in a short ferry trip. When you've driven 1500 miles, with 1500 more to go, knowing those devilish details may allow a smoother ride.

—*Dennis O'Reilly*

Street Atlas USA 9
DeLorme
(Beta software, not rated)
Unless you're traveling in Canada, this more-flexible, more-detailed software is the better buy.
Street: $45
find.pcworld.com/13725

Streets & Trips 2002
Microsoft
(Beta software, not rated)
Has a good-looking interface and Canada mapping information but provides less detail on U.S. routes.
Street: $45
find.pcworld.com/13724

QUICK TAKES

PDA Presentations

IF YOU GIVE on-the-road business presentations, your Handspring Visor can assist you—thanks to a new Springboard module: Margi Systems' Presenter-to-Go. You can store converted PowerPoint, Word, Excel, and other documents either on the module (its 2MB memory holds up to 100 slides) or in your Visor's memory. My shipping unit showed that it could easily connect to any digital projector, monitor, or laptop with a 1024 by 768 display.

The device ships with a remote for controlling the presentation through the Visor's IR port (the range was limited to about 6 feet). Presenter-to-Go costs a hefty $300, and slides must be static—no animations or other effects. It also needs an external power supply (included), though you can review slides in the Visor's memory with battery power. A monochrome Visor can present slides in 256 colors, but if you show photos, they don't look crisp. Margi Systems, find.pcworld.com/13720.

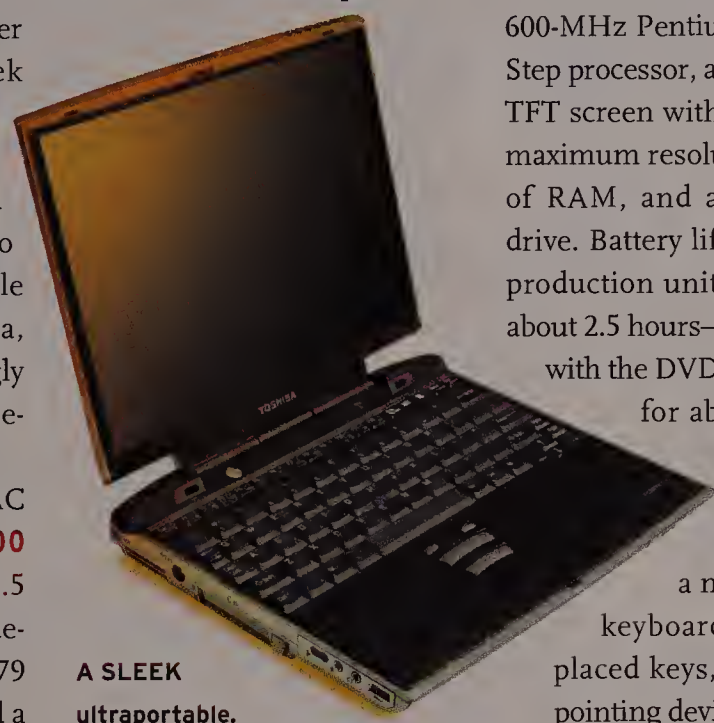
—*Joel Strauch*

Toshiba's Feature-Packed Portégé 4000

NOTEBOOK

TO SATISFY frequent business travelers who want a thin and light notebook without a sacrifice in power, computer manufacturers built sleek ultraportables with robust performance—but at the expense of built-in ports and optical drives. "We want to have those, too," the mobile elite chanted. And Toshiba, among others, has obligingly answered the call with its redesign of the Portégé line.

At 4.75 pounds without AC adapter, the **Portégé 4000** gains about 0.5 inch and 1.5 pounds more than its predecessor, the 3490CT. My $2579 preproduction unit included a built-in 8X DVD and 4X/4X/24X CD-RW combination drive, on-board ethernet and 802.11b wireless ports, a Secure Digital media slot, two PC Card slots, a 56-kbps modem, and Windows 2000.



A SLEEK ultraportable.

This notebook sports a 750/600-MHz Pentium III SpeedStep processor, a crisp 12-inch TFT screen with 1024 by 768 maximum resolution, 256MB of RAM, and a 30GB hard drive. Battery life on the preproduction unit I tested was about 2.5 hours—and that was with the DVD drive playing for about 2 hours. This laptop has a sleek case housing a nearly full-size keyboard with well-placed keys, a touchstick pointing device, and stereo speakers that deliver better sound quality than you get on most notebooks.

One drawback is that the indicator lights (for battery, hard disk, and so on) are positioned at the top of the screen lid, where they can't be seen when the PC is in use. But that's a minor quibble for a powerful system housed in such an easy-to-carry chassis.

—*Michael S. Lasky* ▶

Portégé 4000
Toshiba
★★★★☆
Its David dimensions belie Goliath power and functionality, making this ultraportable every bit as useful as a notebook of more conventional size.
List: $2579
find.pcworld.com/15280

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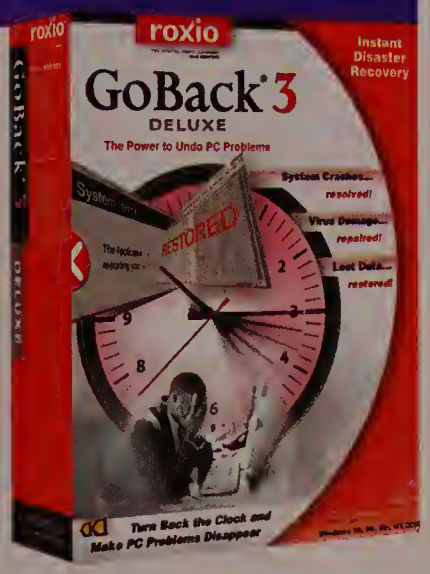

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*PC Data Unit sales of GoBack 3 Deluxe
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Easier PC Partitioning

UTILITY

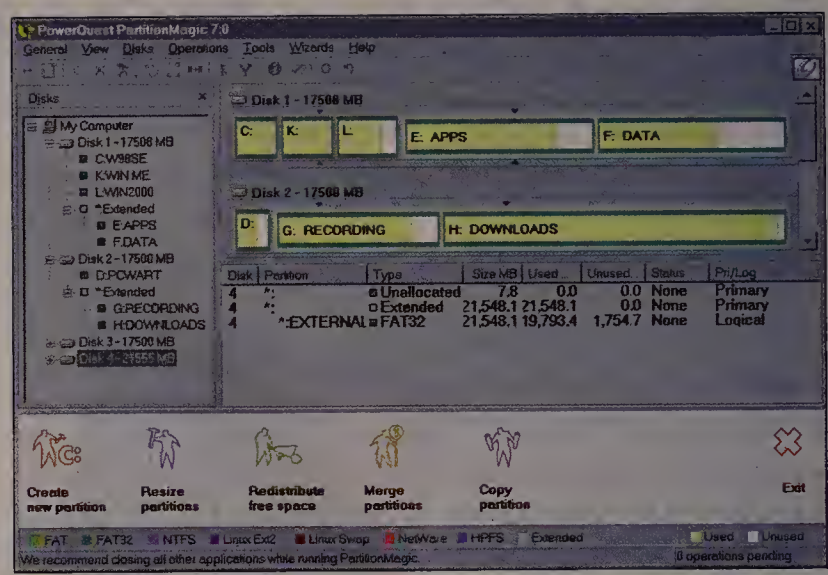
FOR PEOPLE WHO want to organize their data on the volume or partition level or who run multiple operating systems on the same computer, partitioning software is simply a necessity. Happily, PowerQuest's PartitionMagic lets you merge, split, resize, relocate, and change the type of partitions on your hard drive, nondestructively and at will.

The program's easy-to-use interface runs within Windows, though some operations require rebooting temporarily to DOS (or NT boot mode)—the only reliable way to perform them. In almost a decade of heavy use, I've never seen the program crash or trash a hard drive.

Improvements in **PartitionMagic 7** include the ability to run under Windows XP. Previous versions of PartitionMagic support the NTFS partitions that XP and all versions of NT run natively, but those earlier versions don't run under Microsoft's newest OS.

PartitionMagic 7 also adds support for hard drives larger than 40GB, offers the ability to merge NTFS partitions, to split partitions and data at the folder level, and to handle external USB hard drives—even under DOS. PowerQuest also bundles BootMagic, a utility that facilitates booting to different operating systems. It's just one more reason why PartitionMagic is my top pick in partitioning software.

—*Jon L. Jacobi* ■



THE MAIN SCREEN of PartitionMagic 7 combines in-depth information on the drive system with easy access to editing functions.

PartitionMagic 7
PowerQuest
★★★½☆
A worthwhile—if not must-have—upgrade of an already well-done partitioning software package.
Street: $55
find.pcworld.com/15260

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Mark Hughes

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THE SOHO REPORT

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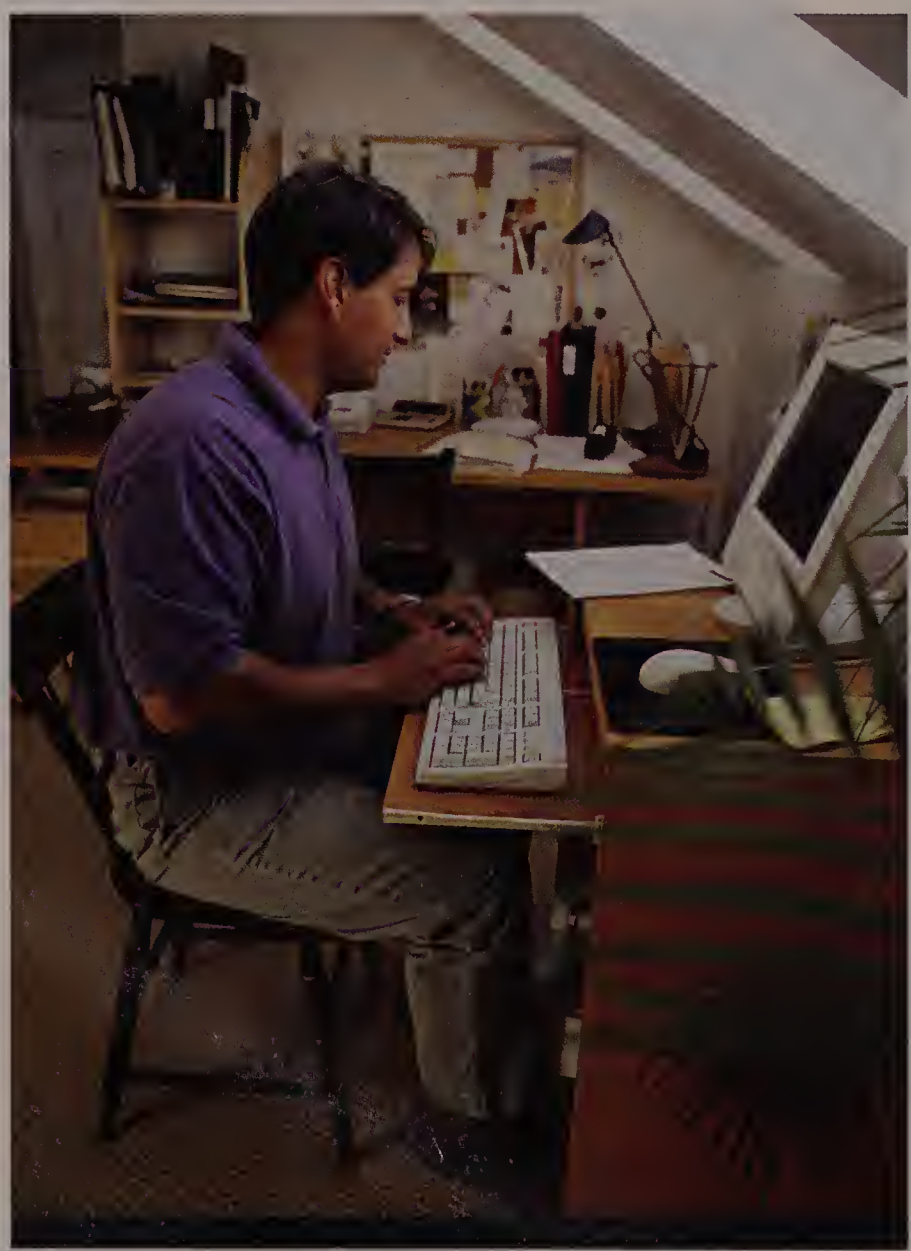

News and Views From Veteran SOHO Professionals

» In the small and home office, no one can hear you scream.

Newcomers to the SOHO (small office/home office) scene often find that the bad coffee, the clutter, and the computer glitches from their old offices have followed them home. But some experts insist that the paperless, and wireless, office is well within the reach of SOHO workers.

"The high-tech tools are already there, but a lot of small businesses are afraid to pick them up," says Debbie Cook, a professional organizer and time management consultant. "For many people, paper still seems somehow more tangible than data."

That's understandable if yours is one of the 114,000 small businesses the IRS plans to audit for the 2000 tax year. (The agency will conduct another 164,000 audits for 2001.)

But receipts, pay stubs, and invoices are useless to businesses that cannot organize, or even find, their paperwork.

Cook (at www.debbiecook.com) helps businesses organize their knowledge and technology assets. She often encourages her clients to scan their hardcopy documents to disk, and discard them or place them into long-term storage.

"I scan all of my own paperwork," she says, "and save it in Adobe PDF format to Zip disks or CD-ROM. Once you get a system like that going, you'll find that retrieving the documents is much easier, and less stressful, since they're all in the same place."

Ending the Paper Chase

Cook's organizational tools and techniques have made her the darling of small businesses from Tulsa, Okla. to Phoenix, Ariz. "Type A" business leaders and entrepreneurs are among her most loyal followers.

"When I meet them [business leaders], they're ready for change," Cook says. "They want to see their organizations running smoothly and more productively, without getting bogged down

Continued on page 3

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- 2720 dpi (9.9MP)
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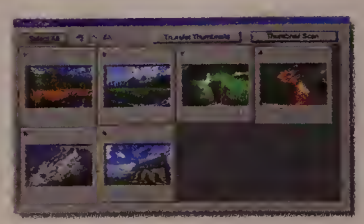
- FS2720U supports USB 1.1 connections
- FS2710 supports SCSI-2 connections

- Accepts 35mm Negatives, Slides and APS Film Canisters



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THE SOHO REPORT

Continued from page 1

by administrative stuff."

One client, a Phoenix-based telecommunications company, needed to keep its customers' paperwork close at hand. Cook had the company install Kiplinger's Taming the Paper Tiger, a software filing system that makes paperwork easier to retrieve. The software lets users search for documents by keyword, and provides quick access to any related paperwork.

Cook says the software strikes a balance between the old office and the new. "The paperless office is really a myth," she says. "It's just too hard sometimes to replace the feeling of having a check in hand, or a signed contract. But when too much paper has piled up, it becomes more of a stressor than a security blanket."

>> DEBBIE COOK, time management consultant and organizer

The Wonder of Wireless

It may be some time before SOHO businesses are completely paperless, but Cook sees no reason they can't become wireless, too.

So-called wi-fi devices, which use the 802.11B wireless connectivity standard, are already untangling home offices by eliminating the need to connect PCs, modems, and peripheral devices with actual cable. Users of some 802.11B wireless networks can take their PCs up to several hundred feet from their network hubs, and still stay connected to the Internet.

Some hardware manufacturers are already making wireless-ready cable/DSL routers for the home and small office.

Users of Asanté Technologies' FriendlyNET FR3002AL router, for example, can set up networks easily, with or without wires. The router comes with a print server, and its integrated 2-port 10/100 Fast Ethernet switch provides the fastest local connections possible. And the FR3002AL contains a natural firewall to protect the privacy of all of the users on the network. Buyers can purchase the router with an AeroLAN PCMCIA wireless module for PCs, or an AeroLAN wireless USB adapter.

Small businesses requiring super-fast connections opt for another Asanté router, the FriendlyNET FR5000, to share any high-speed Internet connection at up to 100 Mbps—10 times faster than conventional SOHO routers. The FriendlyNET FR5000's

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- **Canon USA, Inc.** www.canon.com
- **NewTech Infosystems (NTI)** www.ntius.com
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- **SmartDisk Corp.** www.smartdisk.com

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caching technology makes frequent visits to Web portals and other sites even faster.

Cook is becoming something of a mobile office advisor, too: SOHO business owners are taking to the road more often, as their notebook PCs grow more powerful and wireless Internet connections become more accessible.

"Even coffee shops are adding wi-fi hubs for their customers," Cook notes. "So many of the opportunities that once applied only in small offices now apply to mobile workers, too."

But mobile workers also risk hardware failures and data loss as they roam farther from the office, for longer periods of time.

Battery-making experts at Rayovac last fall released a breakthrough product to keep portable electronic devices up and running: a one-hour Nickel Metal Hydride (NiMH) battery charger for high-capacity NiMH batteries.

Rayovac's own NiMH batteries can last up to six times longer than alkaline batteries in digital cameras. And users of Rayovac's batteries can save hundreds of dollars, because they can charge them up to 1,000 times before replacing them.

The Rayovac 1-Hour Charger takes only an hour to fully charge NiMH batteries. Most battery chargers take as much as seven or eight hours; even "fast-charge" models typically take two to four hours. But only the Rayovac 1-Hour Charger brings four AA or AAA NiMH batteries to full capacity in only 60 minutes.

Rayovac 1-Hour Charger's "smart charger" technology also allows it to detect the amount of charge in each battery, and charge each one individually to maximum capacity; it never overcharges a battery. It can charge a 9V NiMH battery in two to three hours, and can charge Nickel Cadmium (NiCd) batteries as well.

The Rayovac 1-Hour Charger is smart-looking, to boot. Its sleek, high-tech look and modest size makes it an ideal companion for battery-powered electronic gear.

Insurance adjusters and real estate agents who use battery-operated, high-drain devices like digital cameras on the road can use the charger's accessory kit, which includes a carrying case and a DC adapter that plugs right into a car cigarette lighter.

Photography on the Go

Canon's PowerShot S30 digital camera is another indispensable tool for mobile workers and business travelers. The camera is lightweight, compact, and easy on the eyes.

Even with its stylish, elongated metallic aluminum exterior, large, clamshell-type lens, and intuitive control layout, the S30 measures just 4.4 x 2.3 x 1.7 inches, and weighs less than 9

Continued on page 5

THE SOHO REPORT

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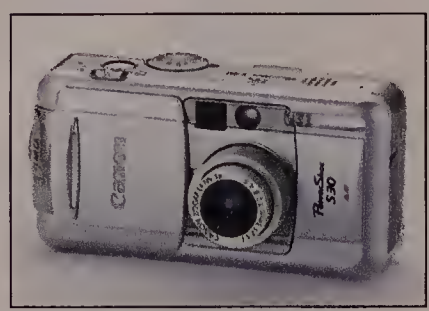
THE SOHO REPORT

Continued from page 4

ounces. Yet Canon has managed to pack into the S30 an impressive capacity for shooting pictures at high resolutions.

The S30 uses a 1/1.8-inch 3.2-megapixel charge couple device (CCD) sensor to produce full-color high-resolution images up to 2048 x 1536 pixels. The CCD chip's RGB primary color reproduction ensures maximum color accuracy, while the camera's digital signal processing and proprietary noise reduction technology yield clear, sharp color images consistently.



>> CANON'S PowerShot S30: Maximum color accuracy and fast shutter speed in a small package

The S30 also captures sharp images fast: In its High-Speed Continuous mode, the camera grabs up to 5 "Large-Fine" pictures at 3 frames per second. And the S30's three-point autofocus and manual focus controls, pre-set white balances, and varied exposure control modes make taking a bad picture next to impossible.

>> ASANTE'S FR5000 accelerated router: super-fast connections

Outputting images from the S30 is as easy in the field as in the home office. With a USB cable, the camera can connect directly to Canon's new S820D Bubble Jet photo printer, which delivers 1200 x 1200 dpi 8 1/2 x 11 inch color prints in less than two minutes. The S30 also includes audio/video output jacks to support the outputting of AVI movies and a CF Type II compatible expansion slot.

Debbie Cook says her own high-tech tools, from her two notebook PCs to her wireless phone and handheld computer, have made her life a lot simpler.

"But it's not enough to simply buy high-tech devices," she says. "You have to first stop and think about how they are going to work for you."

Winner of more than 15 industry accolades and awards – Asanté's Internet routers make it simple to share the Web with everyone in your home or office, with or without wires. Just ask the experts ...

"Our Best Buy is Asanté's FriendlyNET FR3004LC. It's easier to configure than most of the competing routers, and it offers a back-up modem port and an integrated print server."
PC World, January 2001

"Good firewall protection ... fairly easy setup."
CNET Editors' Choice, August 2001

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Share the Web.
Without wires.

THE SOHO REPORT

BACKUP MADE EASY

NTI makes fast work of protecting PC data

A few facts about backup speak volumes about this vital component of caring for important PC data.

Nearly one in four PC users report they have lost data due to virus attacks, power loss, system crashes, or hackers. Sixty-five percent of PC users say they are "very concerned" about data loss.

Yet less than one third of PC users personally back up their data. And the reason is simple. Users believe that backing up data is inherently more cumbersome, expensive, and difficult than they can handle.

NTI NEWTECH INFOSYSTEMS

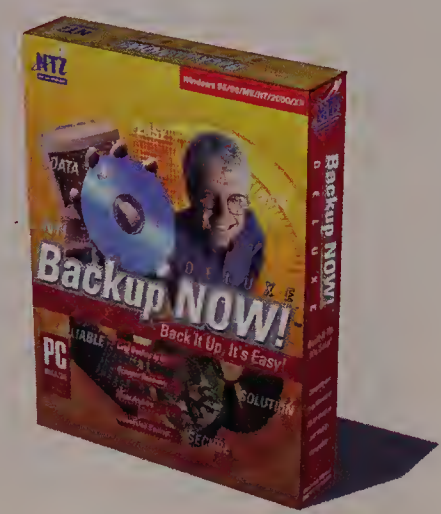
Fortunately, there is a solution to the backup dilemma, a solution that both users and some of the toughest critics in the trade press agree has made backup of PC data a breeze. In fact, that is exactly what a reviewer at PCWorld.com said about Backup NOW! from NTI (www.ntius.com). Meanwhile *PC Magazine* called Backup NOW! "the best choice for backing up" while awarding this innovative product its prestigious Editor's Choice badge.

Not only that, but brewing king Anheuser-Busch has licensed more than 500 copies of Backup NOW! to allow its mobile sales force to easily and effortlessly back up data while they are on the road. Another segment of users attracted to Backup NOW! are people who need to back up sensitive data but don't wish to share it across an enterprise network as a part of corporate backup routines.

Easy for everyone

"Whether the user is a mobile professional, a home user, or a small office user without IT support, Backup NOW! is the easy and affordable way to protect against data loss," says David Yao, Chief Operating Officer at NTI. "It's designed so that a non-technical person can use it quite easily, but it is plenty robust enough for corporate users too."

Backup NOW! works its magic by backing up data to CD-R/RW drives. NTI offers the industry's most seamless compatibility with and support for the widest range of CD read-write drives. This is because CD recording goes to the heart of NTI's core technology, giving customers the peace of mind that comes from knowing the backup will be reliable.



Backup NOW! further distinguishes itself from the competition by offering users a complete and comprehensive backup feature set that combines data backup and disaster recovery features. These many features and benefits include:

- Capability to effortlessly back up an entire drive, drive partition, or selected files and folders
- Ability to create an Emergency Recovery CD for disaster recovery
- A simple scheduler for backup jobs on a daily, weekly, or monthly basis
- Ability to back up system and registry files even while they are in use
- Password protection for the backup image for added security

As a *PC World* online article said, Backup NOW! is just plain "friendlier than those...other major [backup] programs.

"Besides drive imaging, the major advantage Backup NOW! holds over...similar programs...is its support for CD-R and CD-RW technology, as well as the latest, greatest drives."

Click on *www.ntibackupnow.com* to learn more about the easiest and most affordable way to back up PC data.

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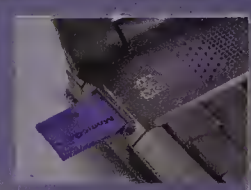
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THE BEST
Hardware Buys

We review 15 new digital cameras, ranging from a $199 point-and-shoot to 4-megapixel professional models, to help you find the best deal.

The BIG Pixel

BY CARLA THORNTON PHOTOGRAPHS BY JOHN KUCZALA

It's been a big year for digital cameras. With 4-megapixel models hitting store shelves, photography buffs are getting more for their money than ever before. Priced between $500 and $1000, these new high-end cameras take digital photography to new heights, producing images that look as good as—and in some cases even better than—images on film.

As high-end models have increased in resolution, so have those at the low end. Digital cameras capable of taking 2.1-megapixel pictures, priced at over a grand just a couple of years ago, now sell for less than $500 (some for less than $200). Industry experts predict 3-megapixel cameras will gradually follow suit.

The 15 digital cameras under-$1000 in our review mirrored this trend—9 of them are priced under $500.

PICTURE THIS

TO PUT EACH OF THE CAMERAS through its paces, we took a variety of pictures indoors (at our photo studio) and outdoors, at both the highest and the lowest resolutions, with and without the flash. We evaluated the resulting images in three forms: as low-resolution shots viewed on screen and as higher-resolution 4-by-6 and 8-by-10 prints. The big news, at least for budget-watchers: Though this year's batch of (relatively) low-cost digital cameras may still lack the bells and whistles of models priced in the $700 to $1000 range, they reproduce details better than ever. And the colors generated by this year's crop look particularly good when compared with those of last year's sub-$500 group.

That said, 4-megapixel cameras still hold the print quality edge in our tests. Canon's $899 4.0-megapixel PowerShot G2 took the overall prize for best pictures, followed by Toshiba's $699 4.2-megapixel PDR-M81. And Sony's $799 4.1-megapixel Cyber-shot DSC-S85, while not ranked as high in overall print quality, posted the best score in our evaluation of a cropped image, where resolution plays a big part.

For producing low-resolution pictures for e-mailing and posting on Web sites, lower-pixel-count cameras hold their own against the 4-megapixel powerhouses, with Canon's $399 2.1-megapixel PowerShot A20 claiming the top honors in our low-resolution on-screen test.

ENLARGEMENTS? USE FILM

NOT ALL IS PICTURE-PERFECT for digital camera enthusiasts. Traditional film cameras are still better equipped for the price. For less than $500 you can get a single-lens reflex model with a zoom lens, extensive exposure controls, and the option to add more powerful lenses.

Consider also the issue of picture quality. Affordable film cameras maintain a slight edge over digital competitors in producing sharp, color-accurate pictures. And if your work requires poster-size enlargements beyond 8 by 10 inches, you should probably stick with film. According to Sally Smith-Clemens, product manager at Olympus, to begin to approximate the fine grain in a 16-by-20 enlargement produced by a film camera, you would have to invest in a 6- to 8-megapixel professional digital camera, for which prices start at around $3000.

A ROUND OF SNAPS: Toshiba's PDR-M61 (top) and Canon's PowerShot G2.

However, any of the top digital cameras on our charts will easily serve your needs for 4-by-6 or 5-by-7 snapshots and 8-by-10 images at very close to film quality. You can squeeze even better pictures out of one of these cameras by investing in extra equipment, such as a dye-sublimation printer (for a short review of dye sublimation printers, go to find.pcworld.com/15780).

The instant gratification that digital cameras provide outweighs their drawbacks, both for casual shutterbugs and for businesses needing quick photo-based documentation. Andrew Johnson, analyst for the research firm Gartner Group, predicts that digital camera sales will surpass film camera sales in 2005.

New and improved accessory products are making it easier to use a digital camera to its full potential. Image editing software, photo-sharing Web sites, and photo-quality ink jet printers that can use ▶

better papers and inks to produce longer-lasting prints all allow you to easily tweak and share the pictures you take. For tips on putting together an image editing suite, see the July 2001 article "Desktop Darkroom" (at find.pcworld.com/15781), and to find out how to keep your prints vibrant, see the same issue's "Fight Photo Fade-Out" (at find.pcworld.com/16140).

GOODBYE, SERIAL PORT

ONE DIGITAL CAMERA trend that owners of older PCs may not appreciate is the disappearance of the serial connection. Many of last year's cameras still had one, but now even low-end models rely exclusively on the faster, more modern USB port to connect to your PC. If you're determined to keep your older PC and you have a new digital camera, you'll have to spend about $40 for a USB expansion card, which plugs into an empty PCI slot.

More welcome is the inclusion of lithium ion batteries and rechargers with many digital cameras (typically those priced above $500). Rechargeable batteries are a must, unless you enjoy spending your hard-earned dollars to endlessly replace standard alkaline AA batteries. Fortunately, you can buy a set of rechargeable AA nickel metal hydride batteries and a charger for around $30.

Whether you desire a digital camera for fun or business, and whether you want to take quick pictures to e-mail to the family or make high-quality, framable prints, there's a good chance you'll find just what you're looking for here. If not, visit www.pcworld.com for reviews of cameras that missed the chart. And head over to find.pcworld.com/15782 for reviews of new high-end models that reached our lab too late for inclusion in this roundup.

BEST BUYS

Best BUY CANON'S $899 PowerShot G2 ranks highest on our $500 and over chart. Though heavy and a bit difficult to use, the PowerShot G2 took the finest pictures and lasts a long time on one battery charge—almost 350 shots.

Toshiba's $299 PDR-M61 offers basic settings and controls, takes about 330 shots on one battery charge, and produces generally sharp printed photos.

FEATURES

TEST Center

DIGITAL CAMERAS

	$500 AND OVER	Street price (9/18/01)	Overall rating [1]	Output	Ease of use	Battery life/ shots [2]	Pixels (millions)/ maximum resolution [3]	Bundled media/capacity (MB)	Picture capacity at highest [4]/ lowest resolution	Focal range (35mm equivalent)/ optical zoom
1	Best BUY Canon PowerShot G2 find.pcworld.com/14800	$899	84	Outstanding	Adequate	Very good/ 348	4.0/ 2272 by 1704	CompactFlash/ 32	14/337	34mm-102mm/ 3X
2	Epson PhotoPC 3100Z find.pcworld.com/14804	$699	83	Good	Very good	Good/ 271	3.34/ 2048 by 1536	CompactFlash/ 16	12/199	34mm-102mm/ 3X
3	Sony Cyber-shot DSC-S85 find.pcworld.com/14803	$799	83	Good	Good	Excellent/ 427	4.1/ 2272 by 1704	Memory Stick/ 16	8/240	34mm-102mm/ 3X
4	Toshiba PDR-M81 find.pcworld.com/14802	$699	81	Very good	Good	Very good/ 325	4.2/ 2400 by 1600	SmartMedia/ 8	5/124	35mm-100mm/ 2.8X
5	Nikon Coolpix 995 find.pcworld.com/14801	$899	81	Very good	Good	Very good/ 309	3.34/ 2048 by 1536	CompactFlash/ 16	10/42	38mm-152mm/ 4X
	UNDER $500									
1	Best BUY Toshiba PDR-M61 find.pcworld.com/10581	$299	79	Good	Adequate	Very good/ 328	2.3/ 1792 by 1200	SmartMedia/ 8	7/112	38mm-114mm/ 3X
2	Casio QV-2900UX find.pcworld.com/14807	$399	78	Adequate	Very good	Very good/ 366	2.1/ 1600 by 1200	CompactFlash/ 16	16/66	40mm-320mm/ 8X
3	Olympus Camedia C-2040 Zoom find.pcworld.com/10584	$449	78	Very good	Good	Adequate/ 217	2.1/ 1600 by 1200	SmartMedia/ 8	7/82	40mm-120mm/ 3X
4	HP Photosmart 318 find.pcworld.com/14806	$199	78	Adequate	Very good	Very good/ 294	2.3/ 1901 by 1212	Internal storage/ 8	10/80	38mm/ [9]
5	Canon PowerShot A20 find.pcworld.com/10586	$399	75	Very good	Good	Adequate/ 179	2.1/ 1600 by 1200	CompactFlash/ 8	7/87	35mm-105mm/ 3X

● = Yes ○ = No
Go to find.pcworld.com/10860 for details on *PC World*'s Star Ratings.

[1] Overall rating for cameras $500 and over is based on price (15 percent), output (30 percent), ease of use (15 percent), features (20 percent), battery life (10 percent), and support (10 percent). Overall rating for cameras under $500 is based on price (30 percent), picture quality (20 percent), ease of use (15 percent), features (15 percent), battery life (10 percent), and support (10 percent). For all ratings, higher is better. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. [2] Measured as number of shots taken before battery runs out. [3] Number represents maximum noninterpolated image resolution. Some manufacturers don't use the entire CCD to capture an image; others interpolate using software to create a larger image.

$500 AND OVER

Canon PowerShot G2

Best BUY **The fine points:** The 4-megapixel PowerShot G2 took the best overall pictures of the 15 cameras we tested, showing fine detail in our still life and rich, realistic—albeit slightly oversaturated—color. The G2's LCD can swing open like a camcorder's and twist on its hinges to point up, down, or in the same direction as the lens—convenient for taking self-portraits, especially when you're using the camera's bundled wireless remote control. A 32MB CompactFlash card comes with the unit; it can hold up to 337 highly compressed, snapshot-size photographs (most other cameras are bundled with cards offering half that amount of storage, or even less). The PowerShot G2 is loaded with options, including semiautomatic and fully manual modes for experienced users. On one charge of its lithium ion battery, the G2 took 348 pictures, about 25 percent more than the average for the cameras in our roundup.

The G2 is heavy and boxy; it's hard to grip with one hand. Stiff dials make changing modes difficult. If you frequently change the size and quality settings for your pictures—and if you like to experiment with exposure—the G2 may not be your best choice: To use the same image size and quality settings in different modes (in shutter-priority mode as well as in full-automatic mode, for example), you must go back through the menus and reenter your settings.

Like its predecessor, the G1, the G2 requires you to hold down a button on the side and press up and down arrows to focus manually. The focus gauge is now visible, though, and the camera enlarges the center of the photo during the operation to help you determine sharpness. A couple of other improvements: You no longer have to press a separate button to use the digital zoom, and you can use the zoom control to magnify shots in playback. You still must press a separate button to see thumbnails, however—a function that other cameras incorporate into the zoom control.

The upshot: Canon's PowerShot G2 offers great photo quality, long battery life, and top-end features for enthusiasts, though it's a bit complicated for novices. ▶

Aperture range	Shutter speed range (seconds)	Manual focus override [5]	Manual exposure controls [6]	Photo output connections	Video/ audio recording	Weight [7] (ounces)	Batteries [8]	Bundled software
f2-f8	15-1/1000	Continuous	M, A, S, P	USB, video	●/●	18.9	One disposable lithium ion AA	This full-featured 4-megapixel camera takes the best-looking photos of the bunch and has a long battery life. ★★★★☆
f2-f8	8-1/1000	Continuous	M, A, S, P	USB, video	●/●	16.9	Four AA	The 3100Z includes flexible controls and adds extra features like a print-tagging button to mark shots. ★★★★☆
f2-f8	8-1/1000	Continuous	M, A, S, P	USB, video	●/●	16.4	Two rechargeable lithium ion	The well-designed and easy-to-use DSC-S85 has extremely long battery life. Photos looked a bit oversaturated, however. ★★★★☆
f2.9-f8	1/2-1/1000	Stepped	M, A, S, P	USB, video	●/●	12.3	Four AA	The PDR-M81 has good picture quality and simple menus and controls, but minimal manual control and nonrechargeable batteries. ★★★☆☆
f2.6-f14	8-1/2300	Continuous	M, A, S, P	USB, video	●/○	16.2	One rechargeable lithium ion	Offers a huge, sometimes intimidating list of features, including a swivel lens and custom buttons. Photos show fine detail. ★★★★☆
f3.2-f3.7	1-1/500	None	None	USB	○/○	14.3	Four AA	Though somewhat bulky and heavy with no manual controls, the PDR-M61 provides very sharp images and lengthy battery life. ★★★★☆
f3.2-f8	60-1/2000	Continuous	M, A, S, P	Serial, USB, video	●/○	14.1	Four AA	This model has a well-designed case with reprogrammable buttons and is the only camera on the chart with a serial port. ★★★½☆
f1.8-f10	16-1/800	Continuous	M, A, S, P	USB, video	●/○	13.7	Two 3V disposable lithium ion or 4 AA	The C-2040 is solidly designed and creates realistic photos, but it won't capture audio with video recording, and battery life is short. ★★★½☆
f2.8-f8	2-1/750	None	None	USB	○/○	10.4	Four AA	The least-expensive camera on the chart offers the barest point-and-shoot capabilities. Photos look blurry. ★★½☆☆
f2.7-f4.8	1-1/1500	None	None	USB, video	○/○	12.6	Four AA	This unit is easy to use, takes above-average shots, and has a built-in panorama mode to line up photos for stitching together later. ★★★½☆

[4] Capacity at highest noninterpolated JPEG resolution. Many cameras can take uncompressed TIFF images, though they are able to store fewer total pictures. [5] Stepped focus permits focusing at preset distances. Continuous focus allows focusing from any distance. [6] Controls include full manual (M), aperture priority (A), shutter priority (S), and program priority (P). [7] Includes standard batteries and media. [8] Type and number of standard batteries used in the camera. In most cases, optional rechargeable batteries are available for cameras that use AA batteries. [9] Lens is capable of digital zoom only.

CLOCKWISE FROM TOP: Epson PhotoPC 3100Z, Sony Cyber-shot DSC-S85, Toshiba PDR-M81, Nikon Coolpix 995.

Epson PhotoPC 3100Z

The fine points: The 3100Z's unusual but ultimately useful design unites on-camera controls with menus on an LCD. Seven buttons flank the LCD on the right and bottom. Each button's function displays in text on the LCD panel, and the functions of the buttons change as you switch among modes, so you don't have to leave the current image to access a separate menu. As a result, one button can be used for many clearly defined tasks, making the camera versatile and easy to use. Shutter- and aperture-priority modes, as well as a full-manual mode and four preset program modes, offer total exposure control, and a dedicated print-tagging button lets you quickly mark shots for printing.

Because of the menu system, you must keep the LCD switched on much of the time, so you can't conserve the batteries by turning it off. Also, picture settings displayed in the LCD could be more informative; for instance, three stars and an *H* can mean either that you're creating a TIFF file or that you're in the camera's interpolated mode of 2544 by 1904. The unit offers limited control over manual focusing and white balance.

The 3100Z produced 271 shots on one set of four AA batteries, slightly fewer than the average number of shots for all the cameras we tested. In general, pictures taken with this camera looked sharp, especially lower-resolution shots displayed on screen. Print quality landed in the middle of the pack—the exposure and color reproduction looked good, but some shots could have had clearer details.

The upshot: Epson's $699 PhotoPC 3100Z is an excellent general-purpose digital camera that's very easy to use.

Sony Cyber-shot DSC-S85

The fine points: The $799 Sony Cyber-shot DSC-S85 lasted the longest on one battery charge of any camera we tested for this roundup: an impressive 427 shots. This heavy but stylish camera includes some unusual extra features, one of which allows you to choose a companion action to occur at the same time you take a picture. For instance, you can set the camera to simultaneously take a high-quality TIFF photograph or to create a smaller one for e-mailing. The camera can capture short movies with sound, too. Using the small-but-handy Jog Dial, you can set the aperture or the shutter speed, or you can flip through captured photos.

The shutter release has a hair trigger, however, and sometimes we inadvertently snapped a picture before the camera finished focusing. Some higher-end functions could be more accessible. For example, you must visit two separate menus to set up auto-bracketing (a function that lets you take three shots in succession, one at the chosen exposure setting, and two more at settings above and below the chosen setting). The camera's manual focusing gauge displays only meters, not feet.

The Cyber-shot DSC-S85 took good pictures overall, though shots of our mannequin were a tad oversaturated and underdetailed. Most of the DSC-S85's controls are located to the left of the LCD—this should please southpaws, if not right-handed photographers.

The upshot: Despite an oversensitive shutter, the DSC-S85 is a reasonably priced, elegantly designed 4.1-megapixel camera.

Toshiba PDR-M81

The fine points: Great picture quality at a bargain price sets the 4.2-megapixel Toshiba PDR-M81 apart from the crowd. It scored a close second to the Canon PowerShot G2 for the best prints, with perfectly exposed outdoor shots and sharp detail in indoor scenes. At just $699, it's one of the two least-expensive models on the high-end chart. Dedicated shortcut buttons let you quickly change the most frequently used settings. A nice time-saver: While you're shooting, you can expand some of the settings information that the camera displays on the LCD into mini-menus with a press of the thumbpad. The PDR-M81 took 325 shots before its batteries conked out—an impressive showing for a camera running on four alkaline AAs.

Though heavy on pixels, the PDR-M81 is light on features and manual controls, and it has a plain, boxy body with a small LCD screen. To turn the camera on, you must press and hold down the low-profile power button, which sits almost flush with the top—a tricky maneuver. Manual focusing is limited to two distance settings: 1 meter and 3 meters. In our tests of low-resolution, on-screen picture quality, this model scored in the bottom third. ▶

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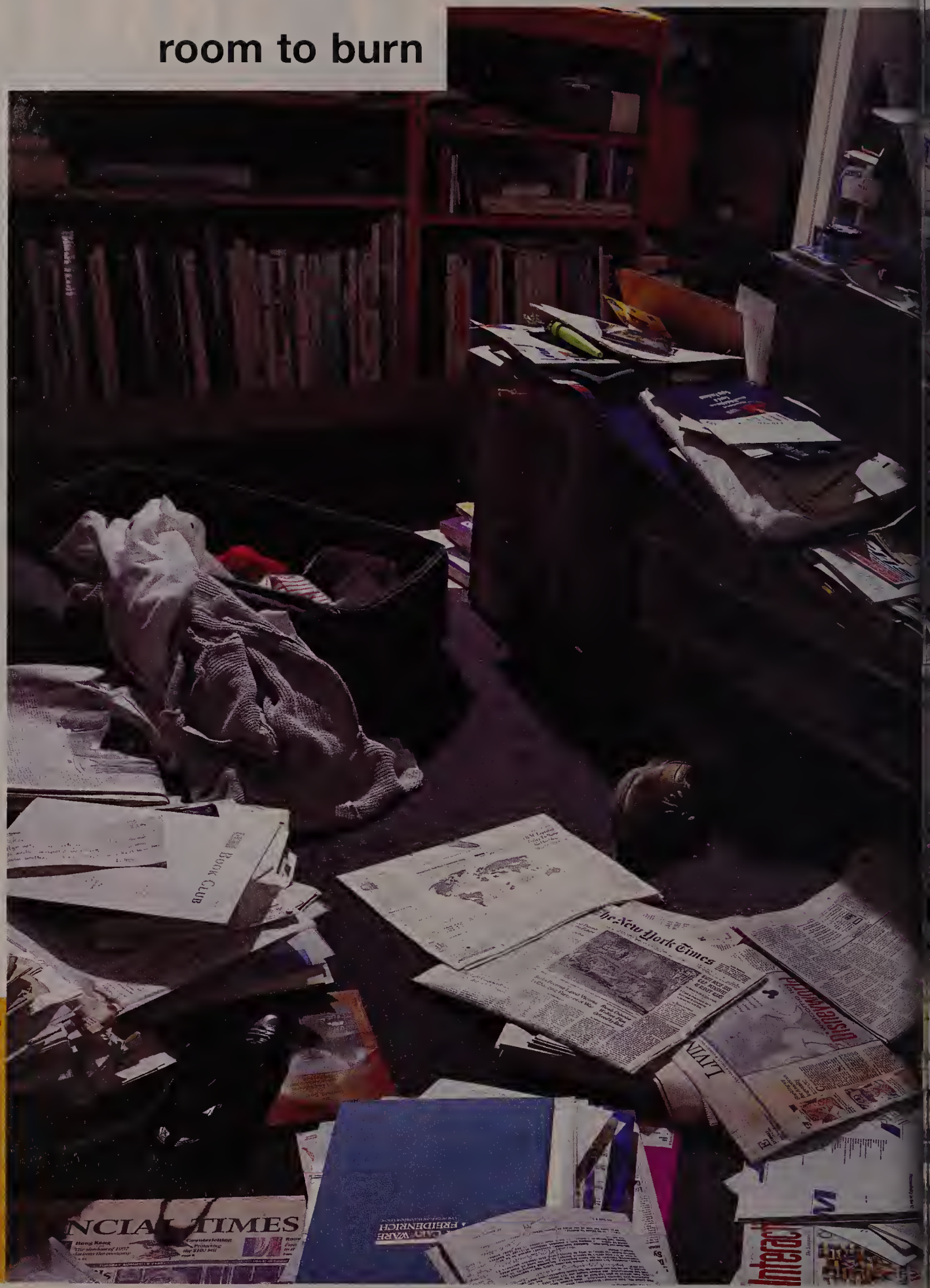

VINYL

DIGITAL VIDEO

DATA BACKUP

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Unlike the Toshiba PDR-M61 (number one among sub-$500 models), which suffers from slow, somewhat jerky zooms, the PDR-M81 zooms smoothly and quickly in both recording and playback modes. You can rotate captured images while displaying them on the LCD—a useful feature for viewing vertical shots. Selecting one of the three programmed settings is a breeze: Just press one button to cycle through intuitive stars and colored boxes displayed in the camera's status LCD. When you use this button, however, you can select only three of nine possible combinations of size and quality at any one time. To choose another pairing, you must go back into the menu.

The upshot: This relatively inexpensive 4.2-megapixel camera creates great-looking photos but lacks advanced features.

5 Nikon Coolpix 995

The fine points: Offering the widest array of controls and tools of any camera on our chart, the Nikon Coolpix 995 is for photography buffs. A white-balance bracketing feature gives you three versions of the same shot: one that uses the chosen setting, one with a reddish cast, and one with a bluish cast. Another control lets you adjust the saturation of a captured image. You can set sensitivity, activate manual focusing, and choose any exposure mode—including aperture priority, shutter priority, or full manual—without touching the menus (which can be hard to navigate).

A pop-up flash replaces the previous model's integrated flash. Nikon says the new location offers better flash coverage and reduces the chance of red-eye, but now you must flip a switch to activate the flash, which is inconvenient. The Coolpix 995 feels well made and will fit nicely in your hand, but it's bulky and heavy, weighing over a pound. Its size and features will overwhelm people looking for a light, simple digital camera.

The Coolpix 995 took an above-average 309 shots on one battery charge. The camera comes with a single rechargeable lithium ion battery and an external battery charger. Unfortunately, in a pinch, you can't swap in a quartet of ubiquitous AAs. Our outdoor shot was slightly underexposed, and some details in our still-life shot looked blurry, but the Coolpix 995 did a fine job of reproducing the colors and details of our mannequin.

The upshot: The Coolpix 995 is a strong performer that may overwhelm novices.

UNDER $500

1 Toshiba PDR-M61

Best BUY

The fine points: With a solid design, flexible controls, and an inexpensive price of $299, the 2.3-megapixel Toshiba PDR-M61 should appeal to photographers looking for a basic point-and-shoot. An unusual feature lets you resize an image file in the camera by changing the picture's resolution from full to half, but it doesn't save the original image. One PDR-M61 strength is long battery life: The unit took 328 shots before power ran out. Photos showed good detail, though colors looked a bit off; printed photos looked better than on-screen images.

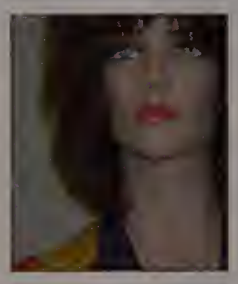
Printed documentation consists of a quick-reference guide with only enough detail to get you started. The main documentation comes on CD-ROM as an Acrobat file, but even that ignores some features, such as photo resizing. The zoom is somewhat slow and jerky. The PDR-M61's optical viewfinder is relatively dark and small, and the lens barrel intrudes into the viewfinder's lower-left corner. Also, the battery compartment door is easy to open but hard to close (the plastic catches don't always retract, requiring you to try to lift a small latch while pushing the door shut).

Toshiba doesn't add a lot of advanced features to the PDR-M61, but it does a good job of providing the basics. A large, conveniently angled dial on top includes two exposure modes: a fully automatic setting and a manual mode that lets you pick from four preset white-balance settings and change the exposure value. Three buttons on the top of the camera let you make quick adjustments to frequently used settings: flash mode, resolu- ▶

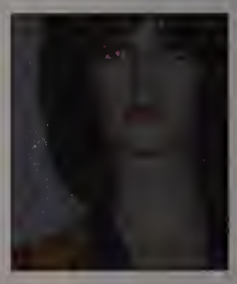
PRINT SAMPLES

CANON'S POWERSHOT G2 tops our list of cameras for overall print quality, but others took honors for individual photos. We captured five different shots with each camera and then rated each photo on criteria such as color, detail, and exposure. More megapixels usually equals higher quality, but it doesn't always. Here are the best and worst shots in each category (minus one picture of our mannequin taken without the flash).

BEST | WORST



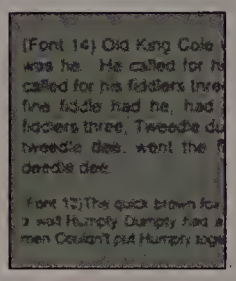
Olympus Camedia C-2040 Zoom



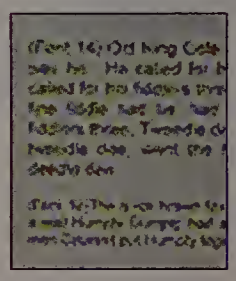
Casio QV-2900UX

Canon PowerShot G2

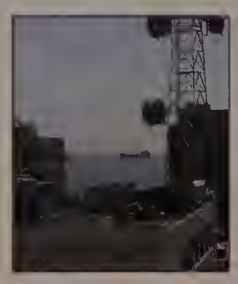
Sony Cyber-shot DSC-S85



Sony Cyber-shot DSC-S85



HP Photosmart 318



Toshiba PDR-M81

Epson PhotoPC 3100Z

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Dell | Home

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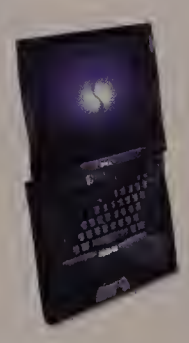
Dell | Home Notebooks



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Dell | Solutions

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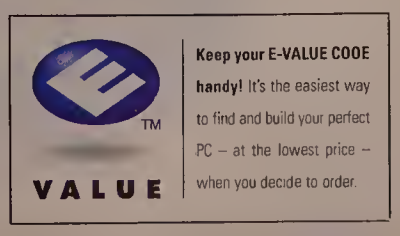

tion, and self-timer. Situated on the back of the unit are dedicated buttons for deleting photos and using macro functions.

The upshot: With a long battery life and 3X optical zoom, the PDR-M61 is a good point-and-shoot camera for just $299.

Casio QV-2900UX

The fine points: Beginners and experts alike will get a lot from this inexpensive $399 model. Novices (and pros in a hurry) will like Best Shot, a library of 28 sample images installed on the camera (a whopping 36 more come on CD-ROM). Pick the image that best represents the type of scene you're photographing, and the camera automatically adjusts the aperture, shutter speed, and other exposure settings to match the settings used to record the selected image. You can even save up to 250 of your own custom settings for recall later (though they take up memory-card space). You're not limited to the sample images, either: You can choose your own exposure settings, including aperture- or shutter-priority modes, full-manual mode, metering, white balance, and sensitivity. Another plus: The Casio QV-2900UX takes a lot of pictures on one set of four AA batteries—366 shots, the second most in our group of 15 cameras.

We were disappointed with the Casio's print quality, however: The camera took a somewhat dark and muddy photo of our cityscape, and it lost some detail when shooting objects on a desktop. The QV-2900UX has no optical viewfinder, and it displays just-taken shots much too briefly.

The threaded lens lets you attach a 1.5X telephoto lens or a 0.7X (28mm equivalent) wide-angle lens. Unlike most other digital cameras, Casio models clearly display the lowered resolution that results when you max out the optical zoom lens and enter digital zoom. When you digitally magnify the picture up to 4X, the QV-2900UX draws a yellow box in the center of the LCD to show how the image will be cropped, and it displays the resulting lower resolution of 800 by 600. The same zoom button works in playback mode to magnify captured photos.

The upshot: Although its print quality could be better, the QV-2900UX offers great battery life—as well as the option of manual control—for less than $400.

CLOCKWISE FROM TOP: Canon PowerShot A20, Casio QV-2900UX, HP Photosmart 318, Olympus Camedia C-2040 Zoom.

Olympus Camedia C-2040 Zoom

The fine points: The C-2040 offers aperture-priority, shutter-priority, and full-manual exposure controls. Fifteen possible combinations of image quality and size—including a range of sizes for uncompressed TIFF pictures—should satisfy just about any photography need. The C-2040 ranked in the top third for picture quality, producing photos with good detail and accurate colors. Our outdoor scene could have been brighter and crisper, though, and a few artifacts disrupted the fine lines in our test pattern shots.

If you like to switch settings between shots, you may get frustrated: You must use the C-2040's menu system to change image size, jump to self-timer mode, or switch between exposure modes. Olympus also uses complex, unintuitive labels for picture settings, including names such as SHQ and SQ1—a situation made more complicated by the unit's wide range of picture sizes and compression levels. The camera has a passable but below-average battery life of 217 shots.

The C-2040 lets you choose among auto-bracketing, manual focus, sequence shooting, preset white-balance options, and an auto-exposure lock. Thumb-pad buttons make scrolling through shots quick and easy. Olympus nicely incorporated controls into the camera's zoom switch: In image playback mode, you can rapidly toggle from a nine-shot thumbnail view up to a 3X magnification of one shot.

The upshot: The picture settings are bewildering, but the C-2040 Zoom offers very good image quality and lots of flexibility.

HP Photosmart 318

The fine points: The 2.3-megapixel Photosmart 318 is a small camera that, at $199, won't break your budget. It's light at only 10.4 ounces, and it's so simply designed that mastering it takes only a few minutes. All but a couple of controls sit on top of the camera, including the shutter button, a thumbwheel, a small status panel, and three tiny shortcut buttons. You access most of the camera's features by turn- ▶

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ing the thumbwheel and pushing it in to select menu items. A simple menu permits you to delete images, view up to nine thumbnails at once, digitally zoom up to 6X, and enter the setup mode.

The Photosmart 318 offers only point-and-shoot photography, lacking even basic exposure compensation. Its three picture-quality settings, the typical flash options, and its self-timer mode account for the full extent of its flexibility. The lens is fixed, capable only of 2X digital zooming (which is less desirable than optical zooming). The camera's pictures looked better on screen than printed. While it reproduced details and colors well in our print shots of a mannequin, the outdoor shot looked dark, and strange color artifacts littered our cropped text shot so thoroughly that words were illegible.

The Photosmart 318 took 294 shots on four AA batteries, which was average for our group of 15 cameras. HP bundles Photosmart software that lets you easily download images from the camera, look at thumbnails in a Windows Explorer–style window, create albums, and perform minor image adjustments (sharpen, crop, adjust exposure, adjust hue).

The upshot: The HP Photosmart 318 is a lightweight, inexpensive choice for basic photos, but it doesn't capture detail well.

Canon PowerShot A20

The fine points: The PowerShot A20's nine picture settings—including resolutions up to 1600 by 1200 pixels—will serve most people's needs. Offering 3X optical zoom and 4.5X digital zoom, the camera smoothly brings the subject in close. If you hold down the shutter button in manual mode, you can take multiple shots as fast as 2.5 images per second, up to the capacity of the memory card. You can also attach a wide-angle or telephoto converter, or a waterproof housing.

The PowerShot A20 is strictly a point-and-shoot model—it doesn't provide exposure controls beyond basic exposure compensation and white-balance settings, and you can't focus manually or take close-up shots in macro mode. It produced a mere 179 shots on one set of four standard AA batteries, the second-worst performance in the group of 15 after Sony's DSC-P50. The 1.5-inch LCD is smaller than the standard 1.8 diagonal inches, and you get a skimpy 8MB CompactFlash card with your purchase.

The PowerShot A20's simple design places all of the controls (except the shutter button) on the back, where they're easy to see. The backward and forward arrow buttons beneath the LCD act both as a thumbpad for moving through menu selections and as a way to enter various modes, such as macro or self-timer. That button layout is a little unorthodox, but it's quite simple to figure out. The camera produced good colors and better-than-average exposure outdoors, but only so-so detail in our still life of desktop items.

The upshot: Regardless of its poor battery life, the $399 PowerShot A20 is easy to use and takes realistic photos. ■

Carla Thornton is a contributing editor for PC World.

MAKE A RESOLUTION

WITH NEW 4-MEGAPIXEL DIGITAL CAMERAS MAKING THE SCENE, you can create larger, better-quality photos than ever before. But that doesn't mean you should crank up your camera to its highest settings every time you snap a picture of Uncle Fred. Take note of a few tricks that will save space on your camera's small and expensive media card.

Want to e-mail the photo or post it on a Web site? Choose a resolution of 640 by 480 pixels, the lowest resolution most digital cameras offer (some cameras go even lower, to 320 by 240 pixels). The smaller size of the file will enable it to download more quickly.

Want to print out pictures on your ink jet printer? For snapshots it's best to pick an intermediate resolution: 800 by 600 or 1024 by 768, for example. You may also have to play with settings in your photo editing software. In Photoshop, for instance, go to *Image* and then *Image size* to choose the shot's width and height, and the number of pixels per inch to print. Anything above 150 ppi will allow good-quality photos on ink jet printers capable of 720 by 720 dots per inch or higher. (Note: Consumer ink jet printers don't make use of over-300-ppi digital images.) To attain standard photo sizes, such as 8 by 10, 4 by 6, and 3 by 5, you'll have to experiment with cropping, too. While resizing your photo, turn off your editing package's resampling feature so that you don't degrade picture quality by losing pixels. Once you've achieved the desired size, you can turn resampling back on.

Aren't sure how you'll be using a picture? If, for example, you want to e-mail a picture and frame a print of it, choose your camera's highest resolution and lowest compression. You can't enlarge a low-resolution shot and preserve quality, but you can always use an image editing program to chop down a high-resolution picture to a more manageable size later. Some cameras, such as Sony's DSC-S85 and DSC-P50, allow you to take both high-resolution and low-resolution versions of the image simultaneously.

SPACE VS. QUALITY: These photos are both 800 by 600. The one at left was shot at 1600 by 1200, and the other at 300 by 225. Upsizing a low-resolution photo degrades its quality.

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Home PCs: All This

THE DELL DIMENSION 8200, our power Best Buy, is a serious sound machine.

& XP Too

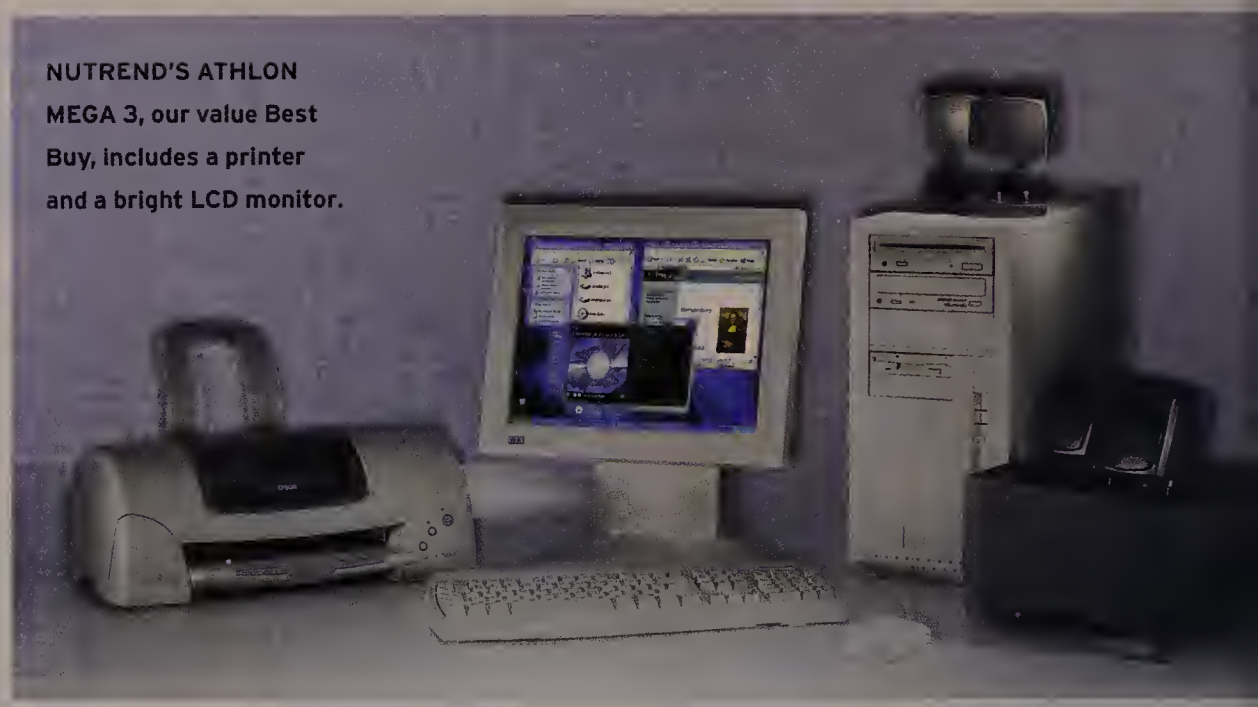
We round up the first home PCs with Microsoft's new OS. They also feature goodies like Web cams and MP3 players. Is it time to dump your old PC?

BY LEIGH ANNE JONES
PHOTOGRAPHS BY ROBERT CARDIN

While 2001 hasn't been the best year for PC vendors, it's been great for buyers. Faced with a glut of super-powerful systems and soft demand, PC makers are dropping prices, throwing in extras, and doing whatever they can to make you an offer you can't refuse. Many of the systems we looked at are bundled with extra goodies, including printers, Web cams, and high-end sound systems. And they all come with Microsoft's new operating system, Windows XP, which vendors hope will be the killer app that motivates people to replace their old computers. See last month's cover story "Windows XP Inside and Out" at find.pcworld.com/15200 for more about this OS.

To check out the new offerings in time for the gift-giving season, we gathered as many XP-equipped home PCs as we could find—most of them arriving at the PC World Test Center just days after Microsoft released the operating system to manufacturers. These early machines ran quite well, though not without a few glitches. For example, the driver that Microsoft ships for several NVidia-based graphics cards caused images in our Quake III game test to break down occasionally into psychedelic-colored polygons. It's a neat effect, but clearly not what vendors intended. Such hiccups are bound to happen with a new OS, and we expect to see graphics quality improve in coming months as vendors install updated drivers.

In total, we evaluated 7 power and 11 value systems for speed, component quality, and features—keeping in mind the inevitable relationship between performance and cost. We found a lot to like, with power to spare, and we profile the five top contenders in ▶



NUTREND'S ATHLON MEGA 3, our value Best Buy, includes a printer and a bright LCD monitor.

each category. Visit find.pcworld.com/15201 for reviews of the other entrants. Most big-name home PC makers are represented, though a few, such as MicronPC and Sony, didn't have PCs ready in time for our story. Others, like Compaq and HP, had just one model available. Watch for reviews of more systems in future *Top 15 Home PCs* charts.

We haven't ranked our choices for this review—we're reserving judgment until we see more XP-equipped machines. But we did consider factors such as speed, price, monitor, features, and sound quality in picking Best Buys from the current field. On the power side, Dell's Dimension 8200 impressed us most with its sexy design, brilliant 19-inch monitor, and thundering Altec Lansing ADA-995 sound system. Among units in our value set, NuTrend's Athlon Mega 3 won our admiration by offering high speed and nice extras, including an LCD monitor and a printer.

Windows XP isn't the only new item to report here: This is the first review to feature our new benchmark, PC WorldBench 4. Note that scores from PC WorldBench 4 and its predecessor, PC

FEATURES

TEST Center

XP Debutants: Home PCs Come

POWER SYSTEM	Street price (9/24/01)	PC WorldBench 4 performance score[1] (Faster)	Comments
ABS Performance 1 find.pcworld.com/15100	Inexpensive $1899	Windows XP Home: Very good 115	Low-cost power system delivers plenty of speed, name-brand components (including a printer), and thorough documentation. Monitor quality was disappointing, however. ★★★½☆
Alienware Area-51 find.pcworld.com/15102	Expensive $3399	Windows XP Home: Good 107	Beautiful, towering system comes with gaming goodies. But the video performance doesn't live up to lofty expectations set by the pricey, name-brand components. ★★★½☆
Best BUY Dell Dimension 8200 find.pcworld.com/15106	Inexpensive $2299	Windows XP Home: Average 106	Handsome, low-cost system offers gorgeous sound and solid game play. Digital artists and music collectors will like the giant hard drive. Has clear, detailed documentation. ★★★★☆
Falcon Northwest Mach V find.pcworld.com/15107	Very expensive $3995	Windows XP Professional: Outstanding 121	Our hands-down speed champ also boasts a powerful, refined sound system. You'll pay dearly for this PC, however. Huge monitor provides only so-so display. ★★★★☆
Polywell Poly K7-1400DDR find.pcworld.com/15115	Inexpensive $2199	Windows XP Home: Very good 115	Speedy PC beats all Pentium 4 rivals and comes at a reasonable price. Monitor output varied from handsome on graphics to blurry on smaller text. Has a generic manual. ★★★★☆
VALUE SYSTEM			
Compaq Presario 5000Z find.pcworld.com/15103	Average $1459	Windows XP Home: Good 99	Nice system for beginners; offers intermediate-level performance in an attractive, compact package. Comes with user-friendly documentation. ★★★½☆
Dell Dimension 4300 find.pcworld.com/15105	Inexpensive $1209	Windows XP Home: Good 94	Good all-around system; middling speed, audio, and video for a low price. Documentation is first-rate. Dell's reliability and service ratings still trump other vendors'. ★★★☆☆
Falcon Northwest Talon 3.1 find.pcworld.com/15108	Very expensive $1845	Windows XP Home: Outstanding 116	Beats most power systems, but you pay a lot for its performance. Monitor displayed handsome images and text, but sound and documentation could have been better. ★★★☆☆
Gateway 500X find.pcworld.com/15109	Expensive $1608	Windows XP Home: Average 87	Solidly constructed; lagged in our performance tests, but comes nicely equipped for music lovers with a four-speaker sound system and a portable MP3 player. ★★★½☆
Best BUY NuTrend Athlon Mega 3 find.pcworld.com/15112	Average $1339	Windows XP Home: Very good 111	Our speedy value champ includes a great-looking LCD monitor to save your eyes and your desk space. A printer and extensive documentation round out the package. ★★★½☆

See find.pcworld.com/10860 for details on *PC World*'s Star Ratings.

[1] Performance word scores reflect comparisons of PCs in the same category (power or value) running the same operating system. For more details, go to find.pcworld.com/15720.

WorldBench 2000, are not comparable. Our Test Center updated PC WorldBench 4's applications and now uses a baseline system that's more comparable to current PCs. Our new baseline—a Gateway Select 1200 running Windows 2000 with a 1.2-GHz Athlon processor, 128MB of PC-133 SDRAM, and a 20GB hard drive—scores 100 points. All other system scores represent a percentage difference from the baseline score. For example, a score of 110 is 10 percent higher than our baseline system's score. Visit find.pcworld.com/15243 to learn more about PC WorldBench 4.

Changing to a new benchmark and a new operating system didn't alter a performance trend we've seen over the past few months: AMD Athlon-equipped PCs continue to blow away Intel Pentium 4–based systems—even those boasting higher clock speeds. For this roundup, we tested a Falcon Northwest Mach V system with AMD's latest processor, the Athlon XP 1800+. The processor's name is a bit misleading, since it actually runs at 1500 MHz (see "AMD's Ratings Gambit," page 27, for more on AMD's XP CPUs). Nevertheless, the Mach V we tested scored 121 on PC WorldBench 4, setting a record for performance and beating the fastest 2-GHz Pentium 4 system we tested by 14 points. The Mach V was the only machine in this review running the costlier Windows XP Professional (the others used XP Home Edition), but we doubt the OS boosted its speed. If anything, XP Pro—with its additional services—may run a bit more slowly.

A PC FOR EVERYONE

WE SEPARATE POWER AND VALUE systems by performance and features, not necessarily by cost; but you naturally pay more for top-shelf features. Power systems offer the latest and greatest technologies and are best suited for high-end activities such as advanced gaming or video editing. Value systems, all falling between $1000 and $2000 in this review, are sufficient for most people's needs. They'll do for most types of home businesses, for telecommuting, and often for some forms of digital entertainment such as burning music CDs or playing MP3s. Of course, they're also great for Web surfing, e-mail, and word processing.

Whether your computing needs call for a dragster or a family sedan, you'll find plenty of options here. ▶

With the Works

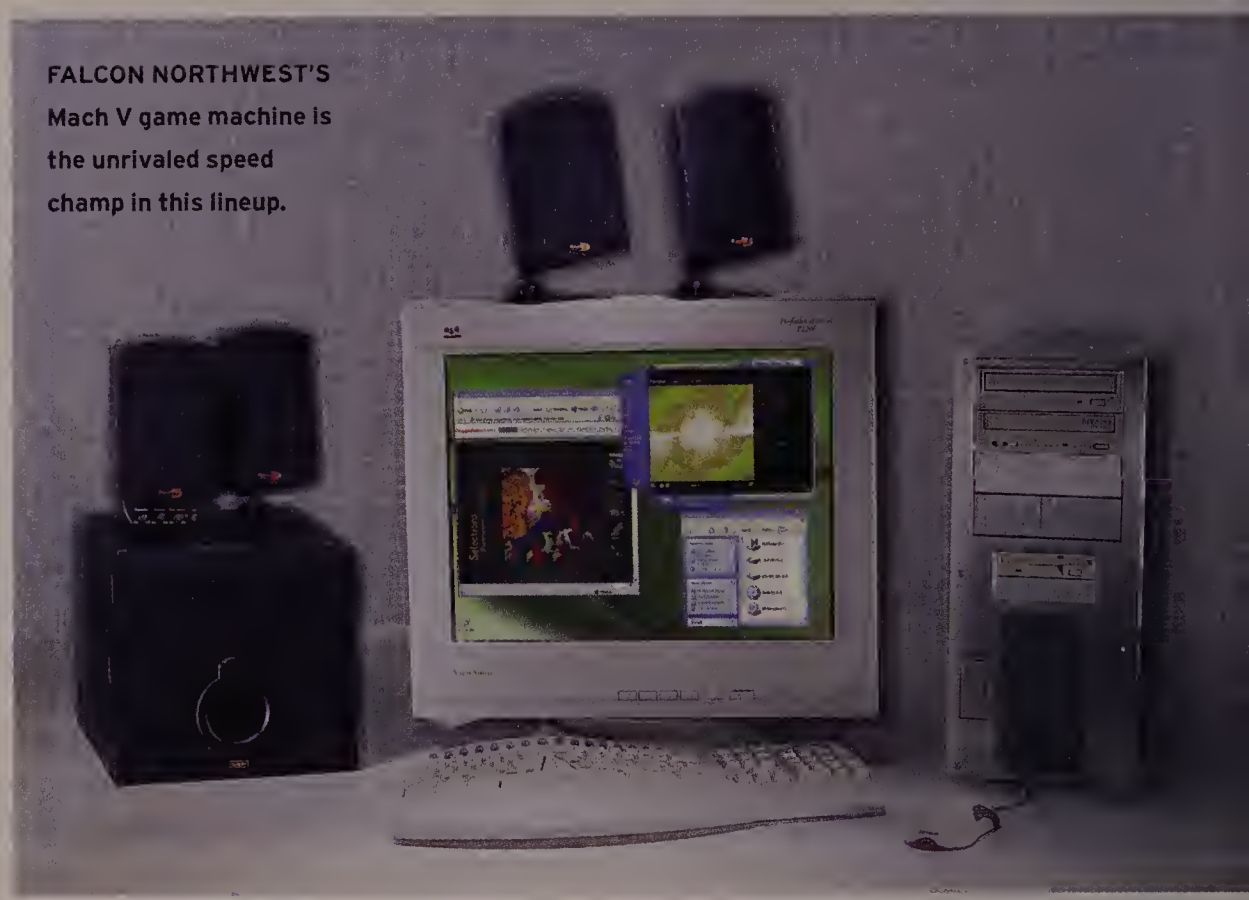
Base configuration	Extra features [2]	Setup/ ease of use	Tech support (hours/days, charge)	Warranty for parts/labor (years)	Vendor's reliability/ service
Athlon-1400, 256MB of RAM, 60GB hard drive, 19-inch monitor, 64MB Leadtek WinFast GeForce3 graphics board	16X DVD-ROM drive, 24X/10X/40X CD-RW drive, WordPerfect Office 2002, Lexmark Z43 Color Jetprinter	Good	9/5, toll-free	3/lifetime	[3]/Fair [4]
Pentium 4-2000, 256MB of RAM, 60GB hard drive, 19-inch monitor, 64MB PNY Verto GeForce3 graphics board	16X DVD-ROM drive, 24X/10X/40X CD-RW drive, Microsoft Works Suite 2001, joystick, Game Pad Pro, four games	Average	24/7, toll-free	1/1	[3]/[3]
Pentium 4-2000, 256MB of RAM, 100GB hard drive, 19-inch monitor, 64MB Dell NVidia GeForce3 Ti 200 graphics board	16X DVD-ROM drive, 16X/10X/40X CD-RW drive, Microsoft Works Suite 2001, V.92 modem	Very good	24/7, toll-free	1/1	Outstanding/ Good
Athlon XP 1800+ (1500 MHz), 512MB of RAM, two 40GB hard drives with RAID, 22-inch monitor, 64MB VisionTek GeForce3 Ti 500 graphics board	16X DVD-ROM drive, 24X/10X/40X CD-RW drive, Easy CD Creator 5 Basic; no modem	Very good	9/6, toll-free	1/1	[3]/[3]
Athlon-1400, 256MB of RAM, two 40GB hard drives with RAID, 19-inch monitor, 64MB Leadtek WinFast GeForce3 graphics board	16X DVD-ROM drive, 16X/10X/40X CD-RW drive, Easy CD Creator 5 Basic, Lexmark XB3 printer, Logitech USB Web cam	Good	24/7, toll-free	3/5	[3]/Fair [4]
Athlon-1200, 128MB of RAM, 40GB hard drive, 17-inch monitor, 64MB MicroStar MS-8B26 graphics board	16X DVD-ROM drive, 12X/8X/32X CD-RW drive	Very good	24/7, toll-free	1/1	Fair/Poor
Pentium 4-1500, 256MB of RAM, 40GB hard drive, 17-inch monitor, 32MB Dell NVidia GeForce2 MX graphics board	16X/10X/40X CD-RW drive, Microsoft Works Suite 2001; no modem	Good	24/7, toll-free	1/1	Outstanding/ Good
Athlon-1333, 256MB of RAM, 20GB hard drive, 17-inch monitor, 64MB VisionTek GeForce2 Ultra graphics board	16X DVD-ROM drive; no modem	Average	9/6, toll-free	1/1	[3]/[3]
Pentium 4-1700, 256MB of RAM, 40GB hard drive, 17-inch monitor, 64MB MicroStar MS-8B37 graphics board	16X DVD-ROM drive, 16X/8X/32X CD-RW drive, Microsoft Works Suite, Creative Nomad II MP3 player	Very good	24/7, toll-free	1/1	Fair/Fair
Athlon-1333, 256MB of RAM, 40GB hard drive, 15-inch LCD monitor, 64MB Leadtek WinFast GeForce2 SH MAX graphics board	16X DVD-ROM drive, 16X/10X/40X CD-RW drive, Corel WordPerfect Office 2000, Epson Stylus Color 777 printer	Average	9/7, toll-free	3/lifetime	[3]/Fair [4]

[2] All home PCs come with a network adapter and, unless otherwise noted, a V.90 modem.

[3] Insufficient data to give a rating.

[4] Due to insufficient data from survey, score is based on responses to anonymous calls for tech support.

POWER SYSTEMS



FALCON NORTHWEST'S Mach V game machine is the unrivaled speed champ in this lineup.

ABS Performance 1

THE FINE POINTS: The 1.4-GHz Athlon-equipped ABS Performance 1 in our survey combines a stellar PC WorldBench 4 score of 115 with a down-to-earth price of $1899. And that relatively modest expenditure buys more than just a fast processor. Our review unit came with a 64MB GeForce3-powered graphics board that aced our gaming tests at even the highest resolutions, 256MB of DDR SDRAM, and a comfy Microsoft Internet Keyboard with seven Internet and audio shortcut keys. Speaking of audio, robust tones issue from the bundled Klipsch ProMedia 4.1 sound system—one of the best speaker sets we've heard. ABS rounds out this package with Lexmark's Z43 Color Jetprinter—our current number one Best Buy ink jet.

On the downside, the 19-inch Hitachi CM715 monitor that shipped with our review system scored below average in our subjective testing. The unit produced blurry and gray 12-point text, as well as washed-out colors in our photograph test.

The Performance 1's clear documentation includes a system manual with plenty of diagrams and a thorough troubleshooting section. And ABS packages all its documentation and software (including Corel WordPerfect Office 2002) in a three-ring binder with color-coded plastic sleeves for different items.

THE UPSHOT: The Performance 1 is a great machine for both home-office tasks and recreation. You'll want to select a different monitor, but the other components are top-shelf.

Alienware Area-51

THE FINE POINTS: Alienware's towering, cobalt-blue Area-51 comes loaded for people who don't think "serious gamer" is an oxymoron. Our review unit, priced at $3399, included Microsoft's SideWinder Precision 2 joystick and Game Pad Pro, as well as games such as Thief II, Deus Ex, and MDK2. With a PNY Verto GeForce3 graphics board carrying 64MB of DDR SDRAM, our test unit earned high marks from our judges for texture, lighting, and color quality in Quake III and Unreal Tournament.

We were disappointed, however, with the 19-inch NEC MultiSync FE950+ monitor. Even after we adjusted the display's brightness and color, our photograph featuring a group of children looked dark, with oversaturated colors and a noticeably reddish tint. Images on our DVD movie test looked equally murky, while 12-point text was too light for comfort.

With a 2-GHz Pentium 4 processor and 256MB of RDRAM, our Alienware test system earned a score of 107 on PC WorldBench 4, beating all other Intel-based home PCs we tested for this roundup but trailing comparably equipped Athlon-based rivals.

The Klipsch ProMedia 5.1 sound system's rich tones and thundering bass impressed us, but a slight hissing sound at higher volumes diminished our listening enjoyment. We're not certain whether the problem lay in the speakers, the Creative Sound Blaster Live X-Gamer sound card, or a combination of the two.

THE UPSHOT: The Area-51 is an attractive system with the chops for limitless gaming fun. Paired with a better monitor, it would make an excellent entertainment center as well.

Dell Dimension 8200

Best BUY **THE FINE POINTS:** Dressed in Dell's "midnight gray" color scheme and powered by a Pentium 4-2000 CPU with 256MB of RDRAM, this $2299 system earned a respectable 106 in our PC WorldBench 4 tests—the second-highest score we've recorded for a Pentium-based PC running Windows XP. Backed by a Dell-branded GeForce3-based graphics board with 64MB of DDR SDRAM, the Dimension 8200 allowed good game play at all resolutions and color depths. Our game judges awarded top marks for lighting and color in Quake III and for textures and color in Unreal Tournament. The Altec Lansing ADA-995 audio system's five cobra-head–shaped satellite speakers and monster subwoofer sounded phenomenal. Shortcut keys on the quiet, smooth USB keyboard sync up with the audio control panel.

The 19-inch Dell UltraScan P991 Trinitron monitor did not render text as clearly as we would have liked, but photographs and DVD movies looked crisp and color-rich. The display paired up very nicely with the system's theatrical audio surround sound during our screening of *Gladiator*.

THE UPSHOT: Dell's darkly handsome Dimension 8200 has luxury and power to spare, whether you're working at home, playing games, or watching DVDs in the Batcave. ▶

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Falcon Northwest Mach V

THE FINE POINTS: This system is fast and fun. Powered by AMD's 1.5-GHz Athlon XP 1800+ processor, our Mach V test machine posted an outstanding PC WorldBench 4 score of 121—the best of any home PC here. A 64MB graphics card built around NVidia's brand-new GeForce3 Titanium 500 chip delivered smooth game play. Images looked especially good in Quake III, but just middling in Unreal Tournament. And the THX-certified Klipsch ProMedia 4.1 speaker system sounds so rich and powerful, the neighbors will either call the cops or join the party.

The neighbors may not stay to watch movies, however. Though we appreciated the outsize screen of the bundled 22-inch ViewSonic P220f monitor, we found DVD images slightly oversaturated on it. We were also disappointed with its blurry, grayish ▶

PC ALTERNATIVE

The Apple Option

Let's say you're in the market for a new desktop, but when it comes to Windows, you are a conscientious objector. Is there a viable alternative to XP? You could run Linux, but it takes real commitment to make that switch—somewhat like driving an electric car. And though you can coax Linux into working with Microsoft Office files, you still need to be an advanced user (read: geek) to do it, and no version of Microsoft Office is forthcoming for Linux.

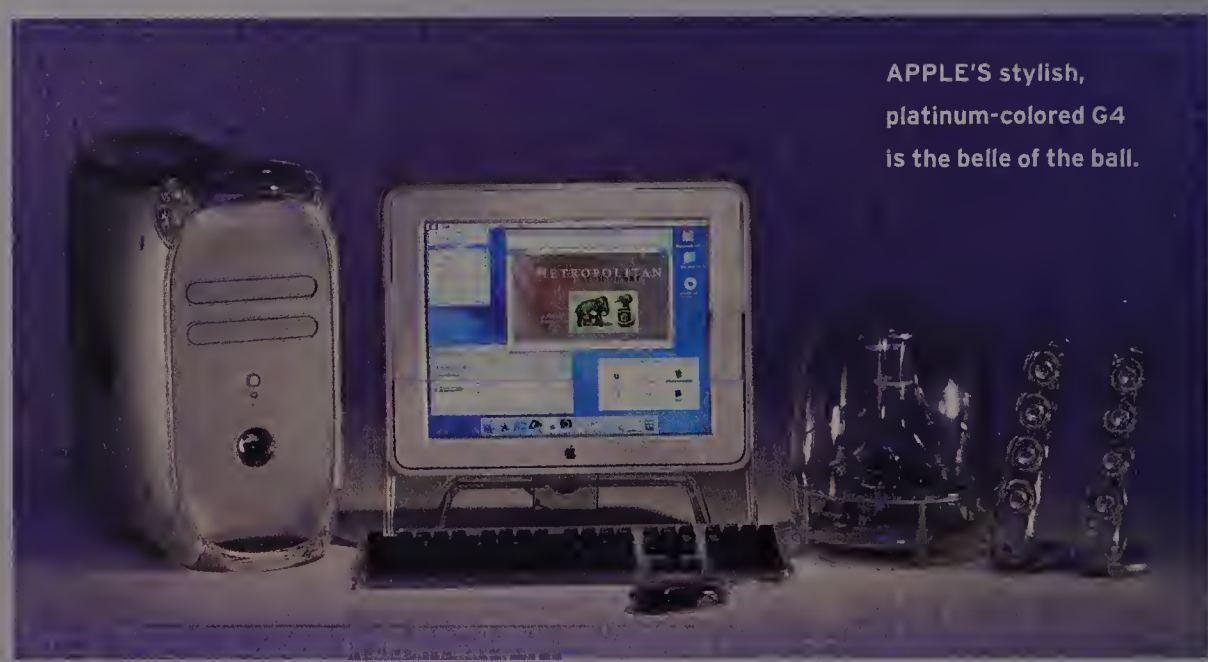
Your other alternative is to buy an Apple. Mac users once lived in isolation from the PC universe. But today, with both Windows networking and a new version of the Microsoft Office suite available for Macs, you may no longer feel banished if you're tempted by the Apple.

In March, Apple released its Unix-based OS X operating system. Fine-tuned for work with multimedia, it sports a new, colorful interface called Aqua. OS X v10.1, an upgrade released at the end of September, adds such important features as DVD playback and support for Windows network protocols. By November, Microsoft will be selling Office v.X for Macintosh, featuring four core productivity apps: Word, Excel, PowerPoint, and Entourage (a combination e-mail and scheduling program). Office v.X is the first big application for OS X, but others, including QuarkXPress and Photoshop, are in the works. The previous incarnation of Apple's operating system, which culminated in OS 9.2, supports many more applications, and Apple ships both OSs with new machines.

With Macs and PCs becoming more compatible, we decided to take a look at Apple's two desktop models: the value-class iMac and the power-level G4. The iMac is an all-in-one system with the heft of a portable television. The 600-MHz model we looked at included 256MB of SDRAM, a 40GB hard drive, an 8X/4X/24X CD-RW drive, a Rage 128 Ultra graphics board, two FireWire (IEEE 1394) ports, two USB ports, and a 15-inch CRT display. It sells for $1299, and at press time, Apple was throwing in a Lexmark Z32 printer. But for that price you get only a weak built-in speaker set; you must pay extra to obtain a good sound system.

Our G4 was built around an 867-MHz Motorola PowerPC CPU—Apple's fastest single-processor configuration. (Apple's current top-of-the-line system carries dual 800-MHz processors.) Our test G4 included 128MB of SDRAM; a 60GB hard drive; a combination 2X DVD-R, 8X/4X/24X CD-RW, and 4X DVD-ROM drive; an NVidia GeForce2 MX graphics board; and Lexmark's Z32 printer. The miniature Apple Pro Speakers registered unimpressively weak, tinny sound, but an upgrade to Harman/Kardon's three-piece SoundSticks speaker set yielded rich audio. Finally, a luminous 15-inch Apple Studio Display LCD monitor showed crisp text and brilliant colors. It adds to the cost, however: Our test unit was priced at $3297. Apple doesn't sell separate CRT monitors, but most other brands work with Apple systems.

Because PC WorldBench 4 doesn't run on the Mac platform, we can't compare speeds of PCs and Apples directly. Nevertheless, we did like the look of the iMac and the G4—both the new OS interface and the chic, solidly constructed cases and peripherals. And as Apple and Microsoft strengthen their ties, you can move over to Mac without leaving your PC friends behind.



APPLE'S stylish, platinum-colored G4 is the belle of the ball.

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12-point text in our screen shot of a Microsoft Word document.

Our Mach V also included two 40MB hard drives with a RAID controller, an abundant 512MB of DDR SDRAM, and Microsoft's Natural Keyboard Pro. All those features add up, however: At $3995, the Mach V is by far the priciest PC in this review.

THE UPSHOT: Power users who know what they're doing—and have the money to do it—should hang on to the 1.5-GHz Athlon processor, choose another monitor, and let the games begin.

Polywell Poly K7-1400DDR

THE FINE POINTS: Priced at a mere $2199, the Poly K7-1400DDR we tested made good use of its 1.4-GHz Athlon CPU and 256MB of DDR SDRAM, earning a score of 115 on our WorldBench 4 tests and beating every Pentium 4–based system we looked at. Bundled extras include a Lexmark X83 multifunction printer and a Logitech Web cam. Five front-mounted USB ports provide lots of places to hook up peripherals like a PDA or an MP3 player.

The 19-inch AOC 1995S monitor's performance veered all over the map in our subjective tests. Text and icons in our Microsoft Word document were too blurry to work with, but photographic images and DVDs looked swell. Despite its snazzy Leadtek WinFast GeForce3 graphics card, this system fell victim to the unintended psychedelic effects in Quake III that we noticed in some other machines. A driver upgrade may fix that problem.

The brushed-aluminum midsize tower case is solid and attractive, but the gray, spray-painted front plates of the 16X DVD-ROM and 16X/10X/40X CD-RW drives look mismatched. Polywell bundled only a very generic system manual with the PC. Fortunately, the company included component manuals as well.

THE UPSHOT: This speedy system has the power and the gear to handle both office work and home entertainment without a hitch, but you'll definitely want to select a better monitor.

VALUE SYSTEMS

Compaq Presario 5000Z

THE FINE POINTS: The $1459 Presario 5000Z is a good-looking family PC with impressive performance. With a 1.2-GHz Athlon processor, 128MB of SDRAM, and an NVidia GeForce2–based graphics board with 64MB of DDR SDRAM, it posted a solid PC WorldBench 4 score of 99. Compaq packages this system in a handsome white minitower case with translucent blue access panels. Two of the system's four USB ports are conveniently mounted behind a white plastic door on the front of the case, and the lower accent panel folds down to reveal storage for five CDs.

Compaq's 17-inch FS740 monitor (which includes a built-in microphone) displayed very legible 12-point text at 1024 by 768 resolution, although icons blurred slightly. The monitor rendered good color—including lifelike flesh tones—in our photograph test, though our DVD movie looked a bit dark. Video games fared poorly, however: The system was unable to support higher resolutions in 32-bit color on Quake III and Unreal Tournament, and we suspect that a driver problem caused incorrect colors and shapes to appear during our Quake III test. The two monitor-mounted JBL Platinum Series satellite speakers delivered clear, reasonably strong sound, although bass tones were a bit weak.

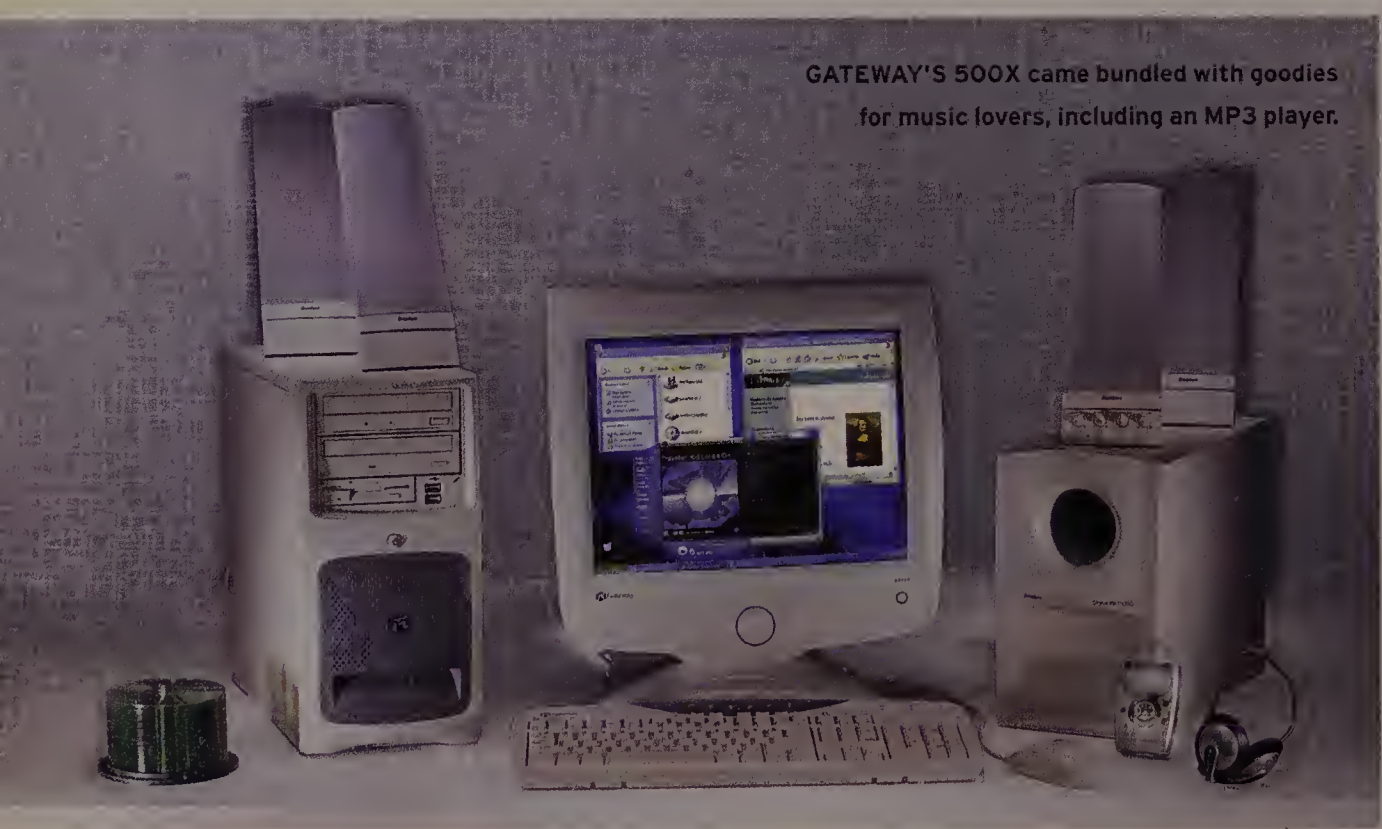
Compaq's USB keyboard is jam-packed with 18 hot-keys, including Internet shortcut buttons and CD and DVD playback controls. The standard keys offer solid tactile feedback.

THE UPSHOT: The Presario 5000Z is an attractive, fairly speedy system for everything from office work to digital entertainment.

Dell Dimension 4300

THE FINE POINTS: Dell got several things right when it designed the case for its new Dimension 4300, including the USB ports and the headphone port on the front, as well as the attractive black-and-gray color scheme (which extends to the monitor and keyboard). The system's nearly silent operation nicely complements its understated good looks. And its moderate $1209 price won't cause you to make too much noise, either.

On most performance measures, this machine is middle-of-the-pack. Equipped with a 1.5-GHz Pentium 4 processor and 256MB of SDRAM, it posted a score of 94 on PC WorldBench 4—about what we have seen from other 1.5-GHz PCs running Windows XP Home. The 17-inch Dell M781S ▶



GATEWAY'S 500X came bundled with goodies for music lovers, including an MP3 player.

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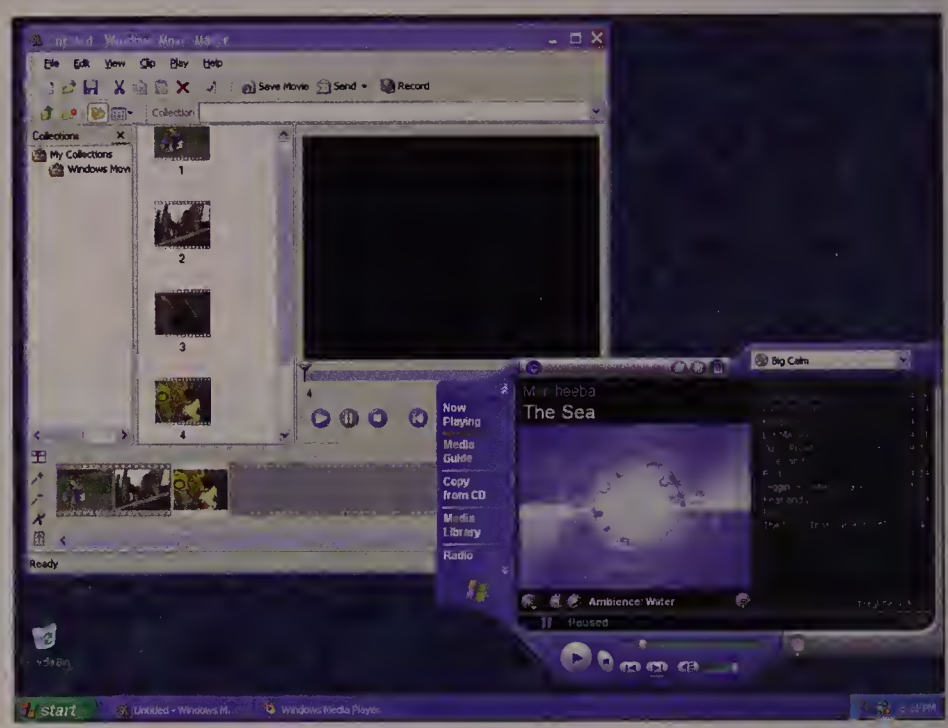
monitor displayed sharp 12-point text at 1024 by 768 resolution. Our color photo of a group of children looked sharply focused, although its colors seemed a bit undersaturated. The Harman/Kardon HK695 audio system's two slender satellite speakers were surprisingly powerful for their size, but the black subwoofer sounded somewhat weak. Game performance was also disappointing: Our judges awarded the Dimension 4300 only middling scores for image quality.

THE UPSHOT: While not a powerhouse or a high-end multimedia center, Dell's Dimension 4300 remains a reasonably priced all-around family system.



WINDOWS XP has built-in utilities for digital entertainment, including an update of Windows Media Player (right) along with Movie Maker video-editing software.

Falcon Northwest Talon 3.1

THE FINE POINTS: With a 1.333-GHz Athlon processor and 256MB of DDR SDRAM, this Talon posted a stunning PC WorldBench 4 score of 116, second only to another Falcon—our power list's 1.5-GHz Athlon-equipped Mach V. We were also impressed with the system's 17-inch ViewSonic OptiSync PF77 monitor. Both photographs and DVD movies looked bright, with vibrant, lifelike flesh tones.

Sporting a 64MB VisionTek GeForce2 Ultra graphics card, the Talon 3.1 easily supported game play up to 1600 by 1200 resolution and 32-bit color depth. Our judges noticed some problems in Quake III, but a driver upgrade might be able to fix those.

While its performance was first-rate, the Talon 3.1 lagged in other areas. The bundled Klipsch ProMedia 2.1 speaker system emitted a constant hissing sound on our test PC, and the Keytronics Propeller Pilot keyboard had mushy, loose keys. Also, our review unit lacked a system manual, providing only a few component manuals and a rudimentary setup poster. We would expect better features on a system selling for $1845.

THE UPSHOT: Equipped with a nice monitor, the Talon 3.1 is a blazingly fast system for gamers on a budget.

Gateway 500X

THE FINE POINTS: People who spend hours in front of a computer screen will appreciate the sharp text and attractive graphics on the 17-inch Gateway EV700 monitor—good thing, because the 500X's foot-dragging PC WorldBench 4 score of 87 means you'll stare at the monitor a lot while waiting for operations to complete. Despite its 1.7-GHz Pentium 4 processor and 256MB of SDRAM, this system trailed all of its 1.5-GHz P4 competitors.

The four-speaker Boston Acoustics Digital BA7500 sound system provides perfectly adequate but unexceptional audio. A 16X/8X/32X CD-RW drive and a stack of CD-R discs (included with our review unit) let you make your own mixes, and audiophiles on the go will appreciate the bundled Creative Nomad II MP3 player. Of course, these extras add to the cost; our review unit was priced at $1648. The 500X earned above-average scores for overall quality in Quake III and Unreal Tournament, but we were unhappy with the lighting effects in both games.

Gateway packages this system in an attractive, easy-to-open minitower case that boasts seven USB ports: two on the front panel, four on the back panel, and one on the keyboard, which includes seven audio playback and five Internet shortcut buttons.

THE UPSHOT: With sharp text and audio extras, the 500X would serve students who enjoy music but don't demand top speed.

NuTrend Athlon Mega 3

Best BUY

THE FINE POINTS: Equipped with an Athlon-1333 processor and 256MB of DDR SDRAM, the Athlon Mega 3 we tested scored 111 on our PC WorldBench 4 tests—better than any Pentium-based system we saw. Text, photos, and DVD play looked great on the 15-inch CTX PV505 LCD monitor, though the color was a smidgen off in DVD play. Game play, in contrast, was way off: Quake III was unplayable in our tests. Updating the driver for the 64MB Leadtek WinFast GeForce2 MX SH graphics card might improve the situation.

NuTrend cut corners in the right places on this value system, helping it win our Best Buy award. The simple beige case, while not exciting, is solidly constructed, and the company saved buyers additional money by opting for a standard Microsoft IntelliMouse with a scroll wheel, instead of a pricier optical model. But NuTrend didn't skimp on other components, shelling out for a 16X/10X/40X CD-RW drive and a four-speaker Altec Lansing ACS54 sound system that performed well in our audio tests.

NuTrend throws in an Epson Stylus Color 777 ink jet printer and packages all documentation and software in a three-ring binder with plastic sleeves for different discs and booklets.

THE UPSHOT: This bargain system has luxury where it counts, making it a good choice for the home or home office. ■

Leigh Anne Jones lives in Northern California and writes about computing trends, consumer affairs, and social issues. PC World *Associate Editor Seán Captain contributed to these reviews.*

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BY MICHAEL LASKY AND DENNIS O'REILLY

ILLUSTRATION BY JEFF BERLIN; PHOTOGRAPH BY MARC SIMON

There it sits on your desktop, day in and day out. Always ready to brighten on your command. (Well, almost always.) Willing to do your bidding at the touch of a button. (Well, several buttons.) And tirelessly spinning its disks and firing electrons to keep you informed and entertained. How do you reward such faithfulness? By making your PC easier and more fun to use, of course! Give your system—be it old and tired or new and peppy—a little sparkle with one of our favorite add-ons. From a $1299 17-inch flat-panel display with TV tuner to a $30 gizmo for cleaning your CDs, these 15 products are sure to take some of the tedium and hassle out of your computing experience in the coming year. So as you compile your gift list this holiday season, don't forget your little beige buddy, quietly humming its one-note tune.

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Samsung www.samsungmonitor.com

At just 2.5 inches thick, Samsung's attractively designed SyncMaster 171MP could win awards for its looks even before you power up its razor-sharp 17-inch screen. With an optional $99 TV tuner and built-in support for an array of external audio and video devices (including HDTV), this slim, flat-panel monitor is as versatile as it is comely. Conveniently, its controls are located on a recessed front panel and on a remote control (which proved easier to use than the panel). Two 5-watt speakers are integrated on the front of the monitor, and a side-panel headphone jack permits private listening. The SXGA screen supports resolutions up to a crisp 1280 by 1024 pixels. Want to watch the Super Bowl while you work on your spreadsheet? With the SyncMaster's picture-in-picture feature, that's not a problem. And unlike most TVs with PIP, the monitor even lets you adjust the size of the PIP window and reposition it on the screen. Sure, it's pricey, but this two-in-one monitor is well worth the expense.

Samsung SyncMaster 171MP

Keyspan USB 4-Port Mini Hub

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List price: $50 ★★★★☆

Keyspan www.keyspan.com

About the length and width of a business card and the thickness of a matchbox, Keyspan's 4-Port Mini Hub is the perfect accessory for any notebook PC owner. Unobtrusive and featherlight, the device expands the add-on capabilities of any PC—notebook or desktop—by transforming a single USB port into four. Many USB mice, keyboards, and other devices get adequate power from the PC, but appliances such as printers and scanners need a powered hub; to accommodate these electricity-hungry peripherals, Keyspan includes a lightweight AC adapter with the hub. Numerous portable USB hubs are available, but none of them have the lithe profile of a Jenny Craig graduate as this one does.

SkipDoctor

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SKIPDOCTOR

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Encyclopedia Britannica www.britannica.com

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text from all 32 books, a Merriam-Webster dictionary, and a world atlas? If the price differential doesn't persuade you to go for the DVD, think of the bookshelf space you can save, not to mention sparing your back the wear and tear of lifting more than 100 pounds of books. The most compelling reason to buy this bargain-priced reference set on a single DVD disc (instead of on multiple CDs) may be how quickly it responds to your queries. Enter your search term, and up pop links to all relevant articles. Flipping through the pages would take longer, even if you knew which volume held the information you were seeking. And the DVD searches are faster than those on the company's Web site.

Encyclopedia Britannica 2002 Expanded Edition DVD

Extra features close an easy sale: The Knowledge Navigator graphical browser helps you brainstorm projects by leading you to updated material on Britannica's Web site, as well as to other sites containing information relevant to your search—all via a 30-day trial of the site's premium service. The addition of a dictionary and world atlas make this a one-stop, interactive reference cornucopia.

Dymo LabelWriter 330 Turbo

LABEL ME CONVENIENT

DYMO LABELWRITER 330 TURBO

Street price: $239 ★★★★☆

Dymo www.dymo.com

Do you print letters from your word processor and then put them in envelopes with handwritten addresses? No matter how smart the printer, printing labels is a drag. That's what makes the Dymo LabelWriter 330 Turbo so special. Whatever program you're printing from—Microsoft Word, say, or the Palm Desktop or the Act contact manager or Dymo's own label-creation software—the LabelWriter quickly and effortlessly spits out self-adhesive labels in sizes up to 2.3 inches wide. And printing a single address is just as easy as printing a database full of addresses. You can also print labels for files, floppies, name badges, bar codes, or myriad other items. Rolls of blank labels load in a snap, and because the device uses thermal printing, you needn't worry about messy ink refills. This petite desktop printer produces decent black-and-white photos on labels too. Now *that's* convenient.

Leap Chair Coach Edition

A CHAIR YOU WEAR

LEAP CHAIR COACH EDITION

List price: $929 to $1399, depending on model ★★★★½

Steelcase www.steelcase.com

Steelcase is one office-chair maker that hasn't been sitting down on the job. The company joined with prestigious leather-goods maker Coach to develop an office chair that moves as you move. Steelcase's research indicated that a person's upper and lower back move independently, so the upper and lower sections of the Leap Chair's backrest move to match your individual "spineprint." Reclining in a standard office chair changes your line of sight to the PC monitor and your keyboard reach, ▶

We know how to spiff up a drab old PC:
Take two drives to go, and add one smart DVD...

which can torpedo the best-laid ergonomic plans. The Leap Chair lets you lean back without altering your vision and reach zones, because the seat slides forward. The chair's armrests pivot as your arms move, and the front part of the seat adjusts up or down to keep the edge from cutting into the back of your thighs. The Leap Chair is upholstered in luxurious ("like buttah") Coach leather in your choice of two stitching patterns and six colors, so you'll be sitting pretty—and comfortably too.

ArialPhone

LET YOUR PC DO THE DIALING

ARIALPHONE

List price: $399 ★★★★☆

ArialPhone www.arialphone.com

What if your PC and telephone worked as a team? The ArialPhone PC-connected wireless telephone headset doesn't entirely integrate phone and PC functions, but it comes close. The base station connects to the PC via a USB port and communicates wirelessly with the headset. The device uses a standard phone jack, is simple to install, and doesn't require any voice training. Press the headset's Action button, and a voice asks, "How may I help you?" Say the word "call" to access the names and telephone numbers in your Outlook Express, Outlook, or Windows Address Book. Say "John Smith," and his number is dialed for you. Or say "dial" followed by the number you wish to call. Answering calls is just as straightforward. In fact, you can do anything with the ArialPhone that you can with a standard telephone, except that it's hands-free. Priced for people who conduct much of their business from their PCs, the ArialPhone works only when the PC is powered on. People have been talking to their PCs since the machines first arrived on their desktops. Now with the ArialPhone, you may get the impression that your PC is talking back.

Flightable Computer Pac C-1000E

YOUR OFFICE ON WHEELS

FLIGHTABLE COMPUTER PAC C-1000E

List price: $159 ★★★½☆

Azpac International www.flightable.com

Sure, a lot of computer cases can transport your laptop safely. And cases with built-in rollers are particularly convenient for lugging your notebook, PC accessories, paperwork, and other items. But what if you could pack everything into a regulation-size carry-on rolling bag with a sturdy built-in table? It sounds like the perfect gift for an upscale three-card monte dealer, but don't laugh—the Azpac Flightable is a versatile office on wheels. The table, which can hold up to 55-pound loads, pops open from the back panel to create an on-the-fly computing stand or work surface that you can use at the airport, in a hotel lobby, or in some other locale. A padded laptop pocket and organizer sit in the front panel, and an expansion zipper adds a few inches to the main compartment. Why travel with just your notebook when you can take your desk along, too?

IT'S YOUR BAG, BABY

CRUMPLER VERY BUSY MAN COMPUTER BAG

List price: $125 ★★★½☆

Crumpler www.crumplerusa.com

Any airport security guard will tell you that most notebook computer bags practically cry out, "Yoo-hoo, thieves! Over here!" If you want your computer to travel incognito (a good idea) and still sport a durable, comfortable, stylish case, look no further than the Crumpler Very Busy Man. Stu Crumpler's whimsically named bag can handle any size notebook in its well-padded canvas and Dupont Cordura Plus compartment, just one of its many Velcro-fastened and zippered pockets. Ingenious escape holes for audio and communication-device cables, a comfortable padded shoulder strap with a loop-around waist cinch, and quick-release buckles make this computer case efficient as well. The bag does lack handles as an alternative to the shoulder strap, however. Available in five color combinations, the Very Busy Man is capa- ▶

Crumpler Very Busy Man Computer Bag

Then a flat-panel TV, cordless keyboard and mouse—
Our USB hub clips the wires 'round your house...

PHOTOGRAPHS: MARC SIMON

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MOUSE WITH YOUR KEYBOARD, KEY WITH YOUR MOUSE

LOGITECH CORDLESS FREEDOM OPTICAL KEYBOARD AND MOUSE

List price: $100 ★★★★½

Logitech www.logitech.com

Tired of constantly switching between keyboard and mouse to browse the Web or work in one or more applications? Wouldn't it be more convenient to move your keyboard or mouse anywhere without being encumbered by their cables? Logitech's Cordless Freedom Optical keyboard and mouse are an appropriately named set of wireless input devices that eliminate two cables and put some of the functionality of each device into the other. The keyboard has a row of ten buttons on the top: one to shut down or restart your PC, and nine that you can customize to open Web pages, start programs, or display a menu you create. A built-in scroll wheel on the left side of the keyboard offers additional navigation shortcuts for Web browsing or any application. You can customize the center wheel on the mouse to allow scrolling through five Web shortcuts of your choosing. The mouse has Favorites/Bookmarks, Reload, Back, Stop, and Help buttons, and it is comfortable in either your left or right hand. Both the mouse and keyboard use radio signals rather than infrared, so you needn't worry about maintaining a line of sight with the receiver.

Logitech Cordless Freedom Optical Keyboard and Mouse

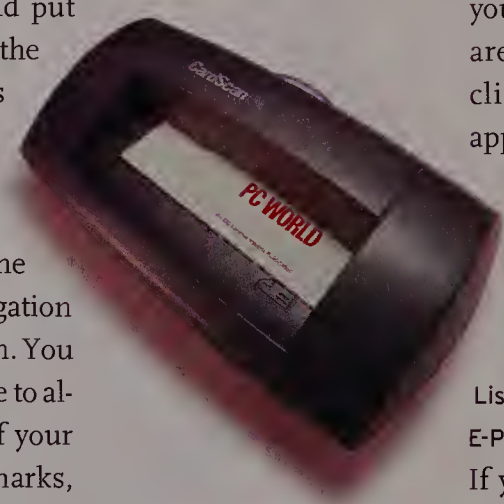
BRING ORDER TO BUSINESS-CARD CHAOS

CARDSCAN EXECUTIVE

List price: $299 ★★★★½

Corex Technologies www.cardscan.com

Business cards remain one of the simplest yet most effective ways to for corporate folk to keep in touch with their contacts. But searching for the right one in an accumulated pile is not an efficient way to gather information. Corex's clever CardScan Executive 600c Color Card Scanner brings refreshing logic and tranquillity to your disorderly house of cards. The USB device sits unobtrusively on your desk and scans a card in about 5 seconds. Its accompanying software determines the proper fields with near-perfect accuracy. On the few occasions when a conversion error occurs, fixing it is a snap. You can synchronize the resulting database of contacts with Palm or Pocket PC devices, as well as with many top e-mail/contact packages, including Microsoft Outlook and Lotus Notes. The CardScan.net Web site lets you access your contacts from any browser. (Links to the site are integrated in the software.) When you right-click an address on the site, a MapQuest map appears; right-click a phone number to dial it automatically. Try *that* with a paper card.



CardScan Executive

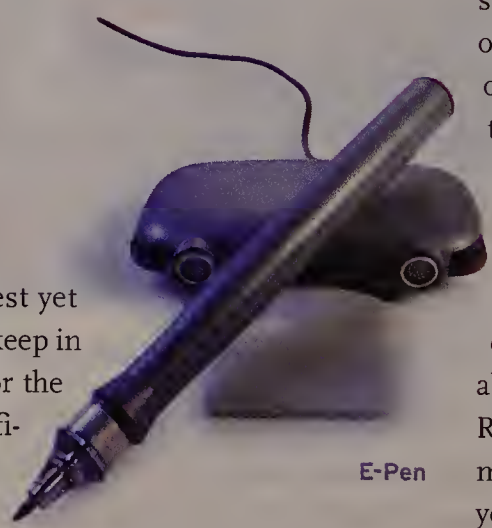
'THE MOVING FINGER WRITES'—TO YOUR PC

E-PEN

List price: $170 ★★★½☆

E-Pen www.e-pen.com

If you would rather scribble than hunt and peck, the E-Pen may be for you. In about 90 seconds, you can plug the device into an open USB slot on your PC, load the E-Pen software, clip the receiver to the top of any piece of paper, place the paper on a hard surface, and start taking notes. Whatever you write or draw on the paper appears simultaneously in the on-screen document. The ability to get handwritten notes into your PC may be all the reason you need to pick up an E-Pen, but using the product can be frustrating. The company claims that the device works with 8.5-by-11 and A4-size paper, but in our tests, notes made on a standard sheet of paper didn't appear on screen until we moved about 3 inches down from the top of the sheet. Repositioning the paper with the receiver attached may create a large gap in the on-screen text when you start writing again. And changes to text you ▶



E-Pen

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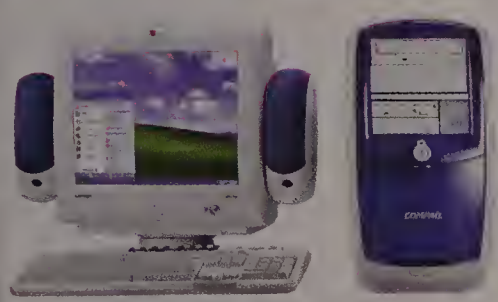
GIVE HOLLYWOOD A RUN FOR ITS MONEY.



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COMPAQ
Inspiration Technology

wrote earlier may not appear in the correct spot in the electronic file, though the E-Pen's undo and redo functions work well. Despite the E-Pen's temperamental nature, nontypists may find its benefits e-normous.

LaCie PocketDrive

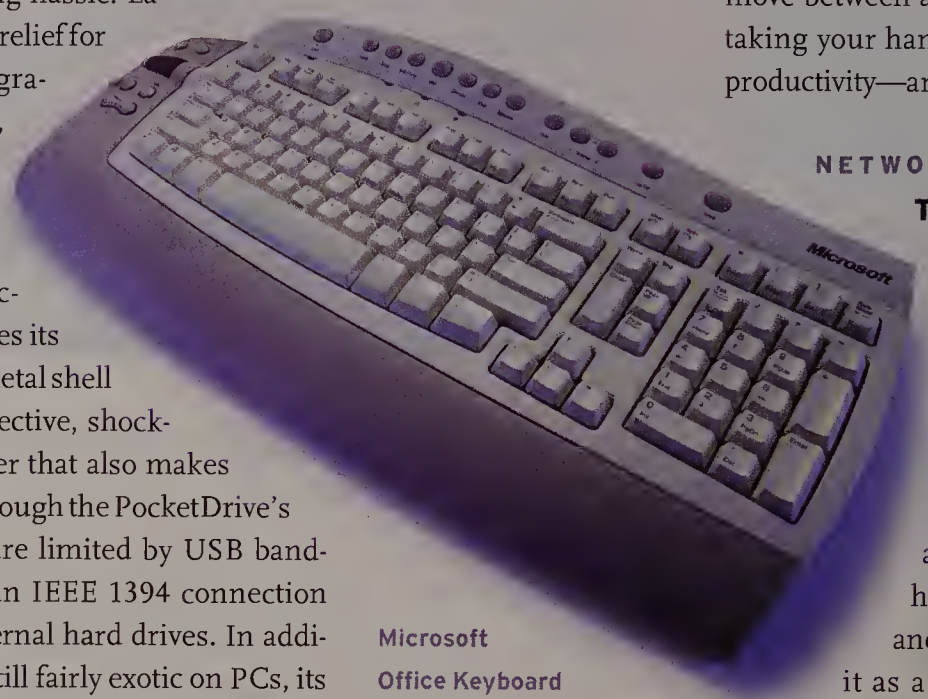
LITTLE STORAGE GIANT

LACIE POCKETDRIVE

List price: $349 (30GB), $699 (48GB) ★★★★½

LaCie www.lacie.com

As graphics, audio, and video files burgeon, your hard disk capacity never seems to be large enough. Simply moving large files between two or more PCs can be a time-consuming hassle. LaCie's PocketDrive offers relief for multimegabyte-file migrations. The 12.5-ounce, videocassette-size external hard drive has both USB and IEEE 1394 (FireWire) connectors. Its light weight belies its ruggedness: Its sturdy metal shell is surrounded by a protective, shock-resistant silicone bumper that also makes the unit easy to grip. Although the PocketDrive's read and write speeds are limited by USB bandwidth, its speeds over an IEEE 1394 connection equal those of most internal hard drives. In addition, while FireWire is still fairly exotic on PCs, its connectors don't require the AC adapter that USB needs. Installation is literally a snap: Just plug the drive into a PC or a Mac—the computer immediately recognizes the drive, and you're ready to do business. A 30GB PocketDrive sells for $349, while the speedier 48GB unit costs $699.



Microsoft Office Keyboard

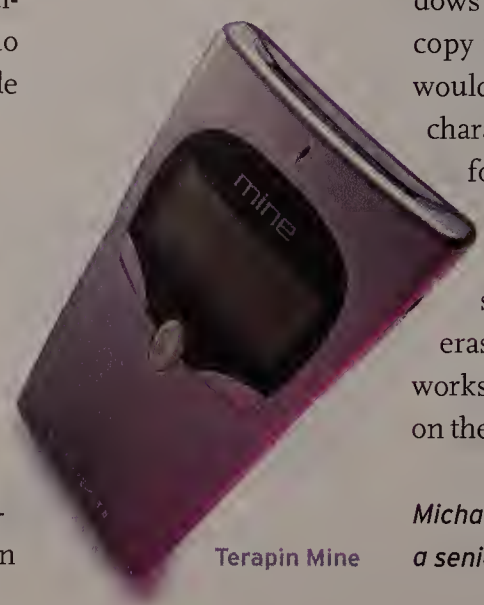
APPS AT YOUR FINGERTIPS

MICROSOFT OFFICE KEYBOARD

List price: $65 ★★★★☆

Microsoft www.microsoft.com/keyboard

Why should you twist your wrist to open Word, Excel, Windows Explorer, your browser, or your e-mail client when all you need is the tip of your finger? The Office Keyboard is a non-mouser's dream come true. Use the scroll wheel on the keyboard's left side to zip up and down through long documents with a panache you simply can't equal using any mouse in captivity. Employ the function keys to handle printing; spelling checking; and even sending, replying to, and forwarding e-mail. (Pressing <F Lock> reverts the keys to their standard operations.) Admittedly, nearly all of the added keys' functions are available on conventional keyboards via <Ctrl>, <Alt>, and <Windows> key combinations. Moreover, the keyboard's layout is distinctly biased against lefties because it assumes that you mouse right-handed. But being able to move between and within Windows apps without taking your hands off the keyboard means more productivity—and more dust on your mouse.



Terapin Mine

NETWORK DRIVE TO GO

TERAPIN MINE

List price: $599 ★★★★☆

Terrapin Mine www.mineterapin.com

Terapin has taken the term "multifunction storage device" to a new level. The Mine puts a 10GB hard drive with a PC Card slot, an ethernet port, USB master and slave ports, and a microphone/headphone jack into a sleek, silver-and-gray, videocassette-size case. Use it as a portable backup drive, an MP3 player, or a storage device for images from a digital camera. The device easily connects to a Windows 98, Me, or 2000 PC via its USB cable. You copy files to and from its hard drive just as you would with any other external drive. The Mine's 16-character-by-four-line backlit LCD is intended only for navigating through the device's files—it can't display images stored inside. But the product's claim to fame is its near-universal connectivity: to PCs, PC Cards, digital cameras, and other USB devices, as well as to networks (via the ethernet port). For a data companion on the road, make yours Mine.

Michael S. Lasky is a senior editor and Dennis O'Reilly a senior associate editor at PC World. ■

PHOTOGRAPHS: MARC SIMON

Clean a disc, print a label, reserve a Coach seat; A soft bag and wheeled table make our list complete.

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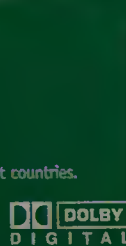

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Microsoft® Windows® XP

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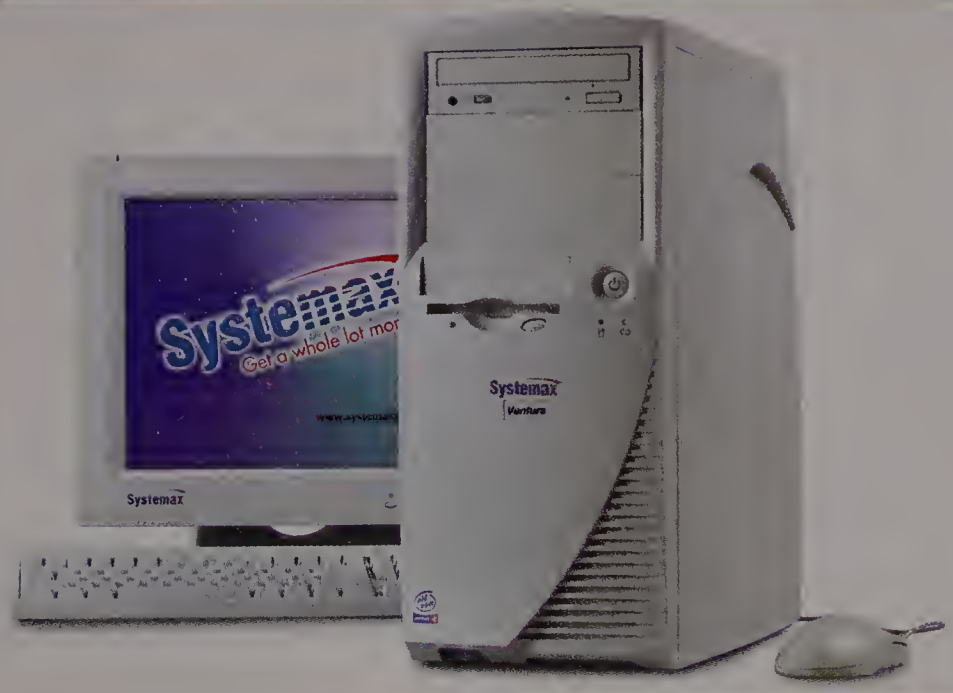
Windows®XP with Pentium®4 processor optimizations



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Microsoft Windows xp

Windows® XP with Pentium® 4 Processor Optimizations

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THE BEST
Hardware Buys

Home Entertainment FACE-OFF

Can your PC replace the latest consumer electronics gadgets? To find out, we pit computers against TiVo, MP3 stereo components, and other video and audio gear. ▶

BY PC WORLD EDITORS PHOTOGRAPHS BY MARC SIMON

DON'T LOOK NOW, but your PC is trying to replace your TV and stereo system. And new devices for your living room are horning in on your PC's turf. Compaq has a stereo component that plays MP3s. ATI and Matrox sell graphics cards that perform TiVo-style digital video recording of TV programs.

What's going on here? It's a trend called convergence, in which the lines between PC and consumer electronics blur: PCs integrate capabilities developed in consumer electronics devices and vice versa. Thankfully, these new products are far removed from the false starts and flops (anyone still own an Audrey?) that marked past convergence attempts.

But convergence can just as easily mean duplication and confusion. Do you really need an MP3 stereo component if your PC works great as a digital music center? You might if you want to port your digital music to the living room stereo. Is the convenience of a dedicated digital video recorder (DVR) worth the cost when your PC can do the job with a simple upgrade?

To help you get a handle on your choices, we've assembled a collection of DVRs, MP3 components, and portable DVD players. We looked at stand-alone consumer devices and at PC upgrades and enhancements (short reviews of each product are available online at find.pcworld.com/14440), then we pared our list down to the best choices on each side for a winner-take-all showdown. When the dust finally settled we had our winners: the best DVR, home digital audio, and portable DVD devices around.

THE PC VS. DIGITAL VIDEO RECORDERS

TURN YOUR PC into a digital video recorder with ATI's $199 All-in-Wonder Radeon (left), or let RCA's $299 Ultimate TV (right) handle the job.

OVERALL ADVANTAGE: Ultimate TV

THAT RATTLING sound coming from your entertainment center could be your VCR shaking in its boots. Digital video recorders designed to replace videotape with a hard drive are becoming more affordable and popular. They offer better recording quality and more storage space (up to 35 hours), and they allow you to record an entire season of show episodes with just a couple of clicks of the remote. Meanwhile, PC video cards increasingly have the ability to record video as well, and video card vendors are bundling software that can let you record TV programs and play them back at your convenience.

To assess the two approaches to digital video recording, we tested three DVRs: Sony's $399 TiVo (very user-friendly), Panasonic's $600 ShowStopper ReplayTV (doesn't require a subscription fee), and RCA's $299 Ultimate TV (can record two programs at once). On the PC side, we tested the TV-on-demand talents of the $199 ATI All-in-Wonder Radeon graphics card (comes with TV schedule software), the PC-VCR software that accompanies the $230 Matrox Marvel G450 card, and SnapStream PVS—a $50 stand-alone application compatible with a range of video cards that have TV recording capabilities. NVidia's Personal Cinema was not available for testing at the time of writing; visit find.pcworld.com/14420 for more information on DVR-ready NVidia-based graphics boards.

The ATI All-in-Wonder Radeon fared best among the PC video cards, enabling users to view a TV schedule and record TV shows within one program. Ultimate TV proved to be our favorite DVR because of its unique features, such as the ability to record two TV programs at once. Between the two, we found Ultimate TV to be the best product for recording TV programs. It's simpler to use and more convenient than the ATI All-in-Wonder Radeon, and you don't need to run a TV cable to your computer to use it. While the PC may be a jack-of-all-trades, it definitely isn't a master of recording TV.

ATI All-in-Wonder Radeon
★★★★☆
List: $199
www.ati.com

RCA Ultimate TV
★★★★☆
List: $299
find.pcworld.com/15560

FEATURES

ADVANTAGE: Ultimate TV

THE ATI RADEON'S big advantage over the DVRs is its flexibility. It allows you to watch live TV on your desktop while you work on something else, or to record programs and play them back on the monitor or on a TV running alongside your PC. You can copy recorded programs onto a CD-R disc—thereby archiving several episodes of, say, *The Simpsons,*

albeit at a fairly heavy compression rate—and watch them later on another PC. You can even create a Video CD of a recorded program to play on a DVD player.

Ultimate TV is, unsurprisingly, linked to the television set. Though it comes with a built-in WebTV device (now renamed MSN TV) that lets you browse the Web or send e-mail for an additional subscription fee of $10 per month, it's less flexible than a PC: You can't copy shows onto discs or other devices (you can automatically archive them onto videotape, however). But as a device designed purely to record TV, Ultimate TV wins hands down. Finding TV programs, selecting which ones to record (the DVR can hold up to 35 hours of TV), and watching them are far easier with Ultimate TV than with a PC sporting the All-in-Wonder Radeon. Ultimate TV can even record two shows at once or record one while you watch another. A PC allows you to do a lot more things, but it is more difficult to use.

CONVENIENCE

ADVANTAGE: Ultimate TV

ULTIMATE TV is easy to use and works with your TV without much hassle. The only setup complication is that it's joined at the hip to the DirecTV satellite service: You can't use it with a cable TV connection. (In contrast, TiVo models are available for use with cable or satellite.) And a DVR is quiet, unlike a typical computer: Even older PCs come with several whirring fans that can undermine your TV-watching pleasure. You could put the PC in another room and run a cable to the TV, but then you'd also have to run cables for the mouse and keyboard, because PCs don't come with remote controls. The result would be a cluttered viewing area with inconvenient controls.

But that's not to say that the All-in-Wonder Radeon has nothing in its favor: There are no subscription fees for the TV schedule service that the Radeon uses, and you can use the graphics card to play PC games on your TV or to watch TV while you work at your PC. For general use, however, choosing the shows to record and playing them back are much simpler with Ultimate TV than with an All-in-Wonder–equipped PC.

PRICE

ADVANTAGE: All-in-Wonder Radeon

ULTIMATE TV COSTS more up front than a PC upgrade board, and you must also pay a $10-per-month subscription fee to obtain the TV schedules that the device requires. Once you've bought the Radeon board, its TV schedules are free (though they are interspersed with advertisements), and you can use it with normal cable or broadcast TV. If you currently use an older graphics board, the Radeon has the added advantage of boosting your 3D graphics power as well. —*Richard Baguley*

THE PC VS. LIVING ROOM DIGITAL AUDIO

TURTLE BEACH'S $300 Audiotron (right) squares off against the $500 Philips FW-i1000 (below).

OVERALL ADVANTAGE: Philips FW-i1000

THE LATE, GREAT Napster boosted both our music collections and our collective consciousness of MP3s. In turn, interest in digital audio has skyrocketed, prompting a host of products that try to provide a digital complement to a standard home audio system. After all, what good is 20GB of digitally stored music if you can't listen to it in your living room or den?

Many people can make do by using their PC in lieu of a stereo system. But for this to work satisfactorily, the PC needs a good sound card and speaker system, such as a Creative Labs Sound Blaster Audigy sound card and Boston Acoustics Digital BA735 speakers (two satellites and a powerful subwoofer). These, together with free music player software like MusicMatch Jukebox or RealNetworks' RealJukebox, allow your PC to serve up tunes just fine. The downsides: You can listen only in the room where your PC is located, and you can expect the music playback to have hiccups if you use your PC simultaneously for other computing tasks.

More suitable for use in a multilevel house or apartment are the $300 Rio Digital Audio Receiver by Sonicblue and the $300 Audiotron from Turtle Beach. Each is styled differently—the Audiotron is fashioned after a standard audio component, and the Rio more nearly resembles a compact radio or a cable ▶

Turtle Beach Audiotron
★★★☆☆
List: $300
find.pcworld.com/15561

Philips FW-i1000
★★★★☆
List: $500
find.pcworld.com/15680

box—but both are designed to sit between your stereo receiver and your PC. Each comes with a remote control and uses a Home PNA– or ethernet-based network to send audio from your PC to your stereo. That's a boon for wired households that already have a home network, but a potential stumbling block (and an added expense) for those who don't.

A third option is to turn to largely PC-independent devices like Compaq's $800 IPaq Music Center and Philips's digital audio–ready compact stereo, the $500 FW-i1000. The IPaq Music Center can connect to the Internet via either a built-in 56-kbps dial-up modem or integrated Home PNA phone-line networking (ethernet is optional); using its built-in CD player and 20GB hard drive, it can store digitized versions of up to 400 CDs. But at $800—a $500 premium over standard 400-CD audio jukeboxes—this unit is priced beyond the reach of the masses. The Compaq device is the easiest of the component-style products to use: Just plug it in, and connect it to a television (for easy menu navigation and viewing track/title information—though alternatively you can navigate and view track data via a two-line LCD text display on the unit) and to your stereo. Like the Audiotron, the Compaq model fits right in with existing stereo component systems.

Also out there: peripherals that wirelessly connect your PC to your stereo. We tried the $100 U.S. Robotics SoundLink Wireless Audio Delivery System but found it the least impressive of the digital audio products we tested. Sound quality was inconsistent, depending on where we placed the two 900-MHz radio frequency transmitters that came with the kit.

If you already have a good stereo system that you want to enhance with digital audio, the sleek, black Audiotron wins our nod. The $500 Philips FW-i1000 (which integrates Internet radio with MP3 playback via a PC) gets our vote if you're starting from scratch and want to enjoy the best of digital and analog audio.

Sure, your PC can act as a latter-day jukebox—as long as you stay close by and don't use it for other tasks simultaneously. But if you want to listen to MP3s through a stereo system in another room, the real battle is between products that help your PC deliver digital audio, like the Audiotron, and digital audio players that can stand alone like the Philips FW-i1000.

FEATURES

ADVANTAGE: Philips FW-i1000

ON THE FEATURES FRONT, both the Audiotron and the FW-i1000 nicely complement a computer's typical music capabilities. Editing track names and title information is easy on the PC, as is crafting playlists—thanks to the keyboard and mouse. The Audiotron's Home PNA capabilities free you to play music and Internet radio in any room of the house via a stereo system and a phone-line network connection. The FW-i1000 offers easy Internet radio, with some 700 channels culled by (free) service provider IM Networks. But the Philips minisystem really shines as the first home stereo to fully tap the power of digital audio: It includes a three-CD changer, an AM/FM radio, a dual-cassette tape deck, two speakers, a host of specialized sound filters, preset buttons, and an ethernet connection for supplying Internet radio and for playing back MP3s from your PC using Philips's software.

CONVENIENCE

ADVANTAGE: Philips FW-i1000

OKAY, YOU ALREADY know how to use a computer. And music software such as RealJukebox or MusicMatch is simple enough. But the PC alone is an impractical digital audio playback choice—unless your computer sits in the room you want to listen to music in, or you're willing to run some cables from room to room.

If you aren't already committed to a stereo system, the all-in-one Philips FW-i1000 is ideal, packaging new digital playback features in a familiar shelf-system chassis. The biggest hassle to using the FW-i1000 or the Audiotron is that you'll need to set up a home network if you don't already have one; once that obstacle is out of the way, you're ready to go. The Audiotron's special advantage is that it can make use of all the MP3 playlists already on your hard drive.

PRICE

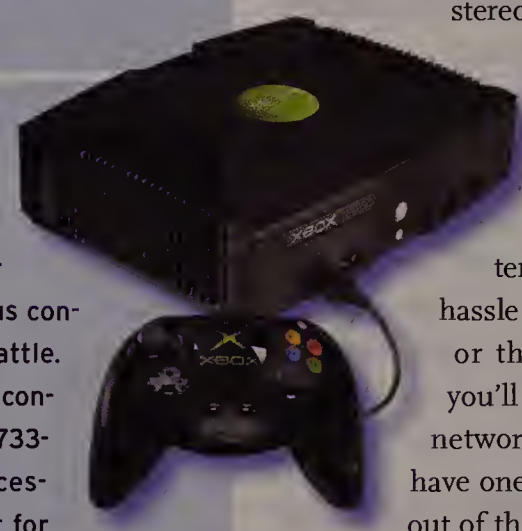
ADVANTAGE: Audiotron

PRICES FOR AUDIO peripherals that either stand on their own or stream music in conjunction with your PC range from $300 to $800. Clearly, using a PC alone is cheaper. Nearly every modern PC comes with everything you need to listen to digital audio right out of the box.

—Melissa J. Perenson

GAMING

THE PC VS. XBOX?



A GAME CONSOLE in PC-component clothing, Microsoft's Xbox adds another layer to the PC versus consumer electronics battle. The new $300 game console is built around a 733-MHz Pentium III processor, an ethernet port for broadband access, and audio and video systems designed by NVidia. It even uses Microsoft's own DirectX 8 API, making it easy for PC and Xbox games to jump from one system to the other. Microsoft has made it clear that Xbox is a games machine, so don't expect it to replace budget PCs yet. But add a GeForce3-based graphics board to your computer, and you'll have a similar system. So which option is for you? Head to find.pcworld.com/15600 for a deeper look at the Xbox.

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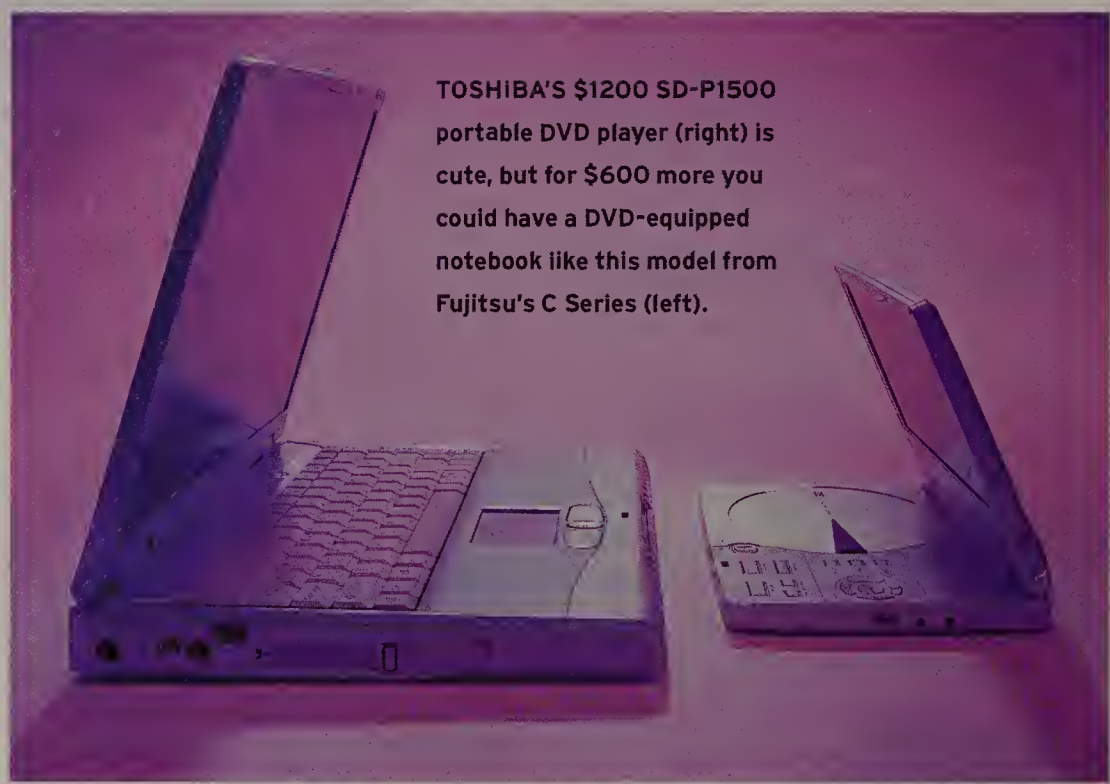
THE (NOTEBOOK) PC VS. PORTABLE DVD PLAYER



TOSHIBA'S $1200 SD-P1500 portable DVD player (right) is cute, but for $600 more you could have a DVD-equipped notebook like this model from Fujitsu's C Series (left).

OVERALL ADVANTAGE: Notebook PC

EYEING INCREASING demand for DVD-ROM drives on notebooks, consumer electronics companies began offering Discman-size portable DVD video players (no more than half as big as a typical notebook), with top-end models as expensive as some notebook PCs and budget entries costing as little as tabletop DVD players.

We looked at two portable DVD players and two DVD-ROM–equipped notebooks to uncover the pros and cons of each for DVD video viewing. We evaluated one portable DVD player from each end of the price spectrum: the entry-level $549 RCA RC5400P and the high-end $1200 Toshiba SD-P1500. We pitted them against the $1999 WinBook X1 and the $1799 Fujitsu C Series Model 6591—two notebooks that have DVD/CR-RW combo drives.

The RCA unit's tiny 5.8-inch screen was too small for us to read film credits, unlike the 8-inch, widescreen display of the Toshiba. Sound was remarkably superior on the Toshiba model as well; unlike the RCA, it supported most major digital formats, including DTS (an advanced surround sound format).

Of the two notebooks, the Fujitsu C Series permitted better DVD viewing. Its hardware video support includes an integrated S-Video jack for output to a TV and it has built-in front-panel control buttons.

FEATURES

ADVANTAGE: Toshiba SD-P1500

THE FEATURE sets of the 5.2-pound RCA and 4.9-pound Toshiba DVD players gave them the advantage over the notebook PCs. Both DVD players included programmable playback, adjustable playback image size, picture zoom, remote control, adjustable sound for speakers or headphones, and a jack for connecting to a TV. Each player uses a rechargeable lithium ion battery that attaches to the unit—the Toshiba's fits as an integrated bottom slice, while the RCA's piggybacks somewhat awkwardly on the player itself. What's more, the RCA player lasted only about 2 hours per battery charge—scarcely enough for us to watch one movie. The Toshiba unit's battery lasted a comfortable 3.5 hours. On the notebook side, the WinBook turned in impressive battery life of almost 3 hours, but the Fujitsu was just behind at 2:47.

Fujitsu C Series Model 6591
★★★★☆
List: $1799
find.pcworld.com/15581

Toshiba SD-P1500
★★★★½
List: $1200
find.pcworld.com/15580

CONVENIENCE

ADVANTAGE: Toshiba SD-P1500

BOTH PORTABLE DVD players have one coveted feature that notebooks don't: instant power-up. If you want to watch a video on a notebook, you'll have to wait for Windows to start up. With a DVD player, you just flip the power switch. Still, if you carry a Windows notebook anyway, the ability to play DVD movies on it is a nice perk. Another plus for playing DVD videos on a PC: Some discs come with DVD-ROM–exclusive features such as Web links, viewable scripts synced to the scene, and PC games.

We connected the Toshiba player and the Fujitsu notebook to a television with the included S-Video cables. The video and audio output of both were close enough in quality that the living-room convenience of the Toshiba's remote gave it an immediate advantage. Using the notebook's controls required face-time with its screen, keyboard, and mouse. And the Toshiba's size made it more convenient as a portable movie machine.

Positioning the Toshiba player on top of the TV was easy because of the player's significantly smaller footprint. Barring the need to access the DVD-ROM features of a video disc, the clear winner on convenience is the Toshiba player.

PRICE

ADVANTAGE: Notebook PC

CONVENIENCE MUST be weighed against the Toshiba's $1200 price tag. With tabletop DVD players available for less than $200, it doesn't make sense to buy a $1200 player *only* for its portability. Clearly the Toshiba is a luxury item when for $600 more you can buy a DVD player and a notebook. —*Michael S. Lasky* ■

Richard Baguley is a senior associate editor, Melissa Perenson is an associate editor, and Michael Lasky is a senior editor for PC World.

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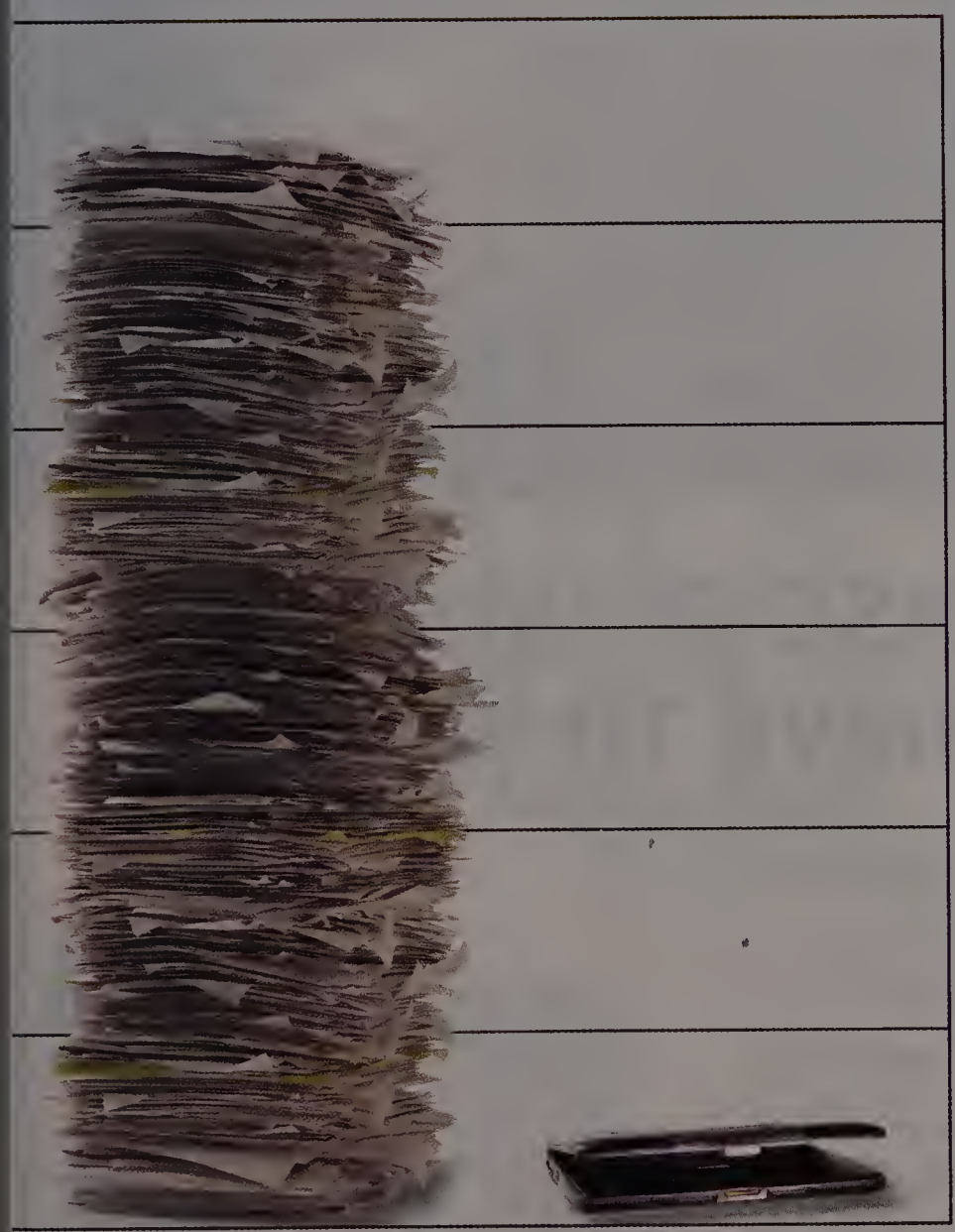

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Yet so may IT professionals today find that their days are dominated by dealing with these never-ending tactical issues, almost always at the expense of strategic projects that improve customer care, enhance product and service quality, or improve the bottom line. As a result, it is not surprising that a fast-growing number of corporate organizations are turning to outsourcing options.

In fact, International Data Corp., Framingham, Mass., estimates that demand for desktop and LAN outsourcing services will soar from $14 billion in 1998 to nearly $31 billion by 2003. And Gartner Dataquest found that the number of IT managers who are outsourcing IT services nearly doubled from 1999 to 2000.

Common Sense, Business Sense

Simply stated, the reasons for this anticipated growth in desktop and LAN outsourcing make excellent business sense as well as common sense. The reasons include the following:

- IT departments wish to focus their attention on strategic initiatives that will improve customer care or product and service quality.
- Instead of treating IT as a fixed cost, Enterprises outsource their IT operations to make them variable costs, allowing them to better respond to changing economic conditions.
- With some of the newer integrated enterprise managed desktop services, the costs of IT can be reduced dramatically and become predictable, based upon a contracted monthly fee for IT products and services selected from a targeted menu.

The bottom line is that IT technology evaluation, vendor standardization, product support, service, and IT staff recruitment and retention are seldom seen as efficient ways to leverage the given IT resources. Thus, IT managers and CIOs are focusing increasing attention on outsourced desktop management solutions.

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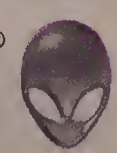

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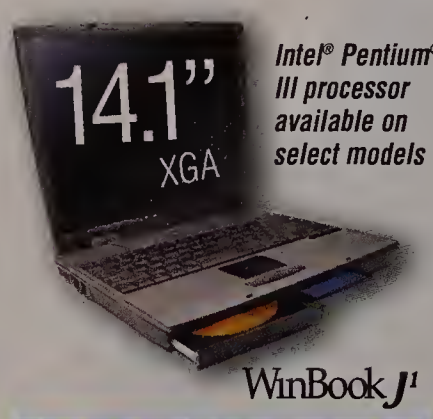

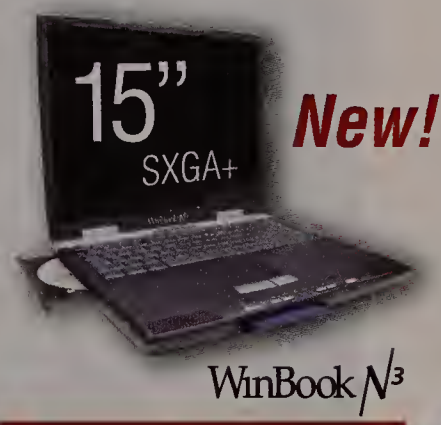

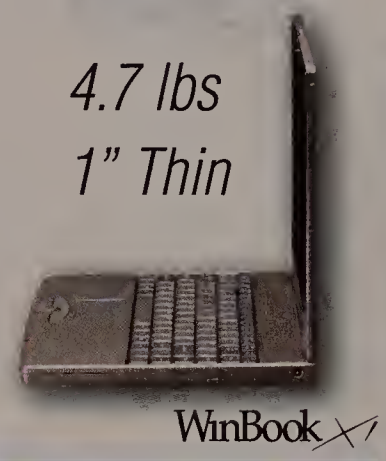

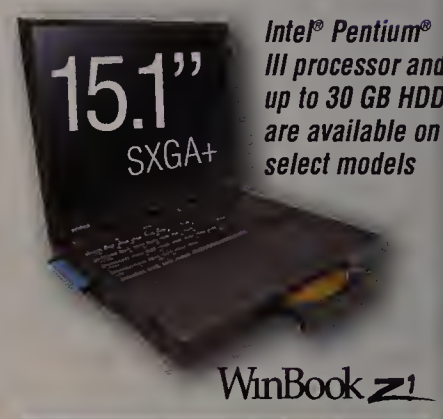

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- Intel® Celeron™ processor
- 1 GHz
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- Trident Cyberblade II 3D Graphics with up to 8 MB Shared Video RAM
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- Integrated dual-button touchpad
- 56k† capable v.90 internal fax/modem, built-in
- 3.5" floppy drive
- 1.42" and 6.9 lbs.
- 1 year limited extendable warranty
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$999 Offer Code: WBJ-110139a*

Upgrade to 256 MB RAM, 20 GB HDD and DVD — $200

Designed for Affordability

- Intel® Pentium® III processor
- 1.1 GHz
- 15" SXGA+ TFT color display
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- Via Pro Savage Graphics with up to 32 MB shared RAM
- DVD-ROM drive, built-in
- 57WHR lithium ion battery
- Integrated dual-button touchpad
- 56k† capable v.90 internal fax/modem, built-in
- 10/100 Ethernet, built-in
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- 900 MHz
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- SiS 3D 4X AGP graphics with up to 64 MB shared RAM
- DVD-ROM drive, built-in
- 45WHR lithium ion battery
- Integrated dual-button touchpad
- 56k† capable v.90 internal fax/modem, built-in
- 10/100 Ethernet, built-in
- Thin (1") & lightweight (4.7 lbs.)
- 1 year limited extendable warranty
- Microsoft Windows® XP Home Edition, pre-installed

$1599 Offer Code: WBX-110125a*

$56 No money down, 36 mo.
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Windows® XP Professional — $99

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- 15.1" XGA TFT color display
- 64 MB SDRAM
- 10 GB ultra DMA removable hard drive, upgradable to 20 GB
- 8 MB 2X AGP ATI RAGE™ Mobility™ 128 3D video
- 24X CD-ROM modular/ removable drive
- 60WHR lithium ion battery
- Integrated dual-button touchpad
- 56k† capable v.90 internal fax/modem, built-in
- 3.5" floppy drive
- 1.59" and 7.3 lbs.
- 1 year limited extendable warranty
- Microsoft Windows® XP Home Edition, pre-installed

$1199 Offer Code: WBZ-110115a*

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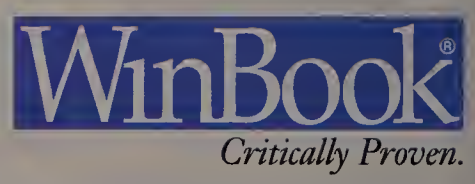

* Reference the appropriate Offer Code to receive featured configuration and pricing.
† 56k modems are capable of 56 kps downloads. Due to FCC rules that restrict power output, however, current download speeds are limited to 53 kps. Upload speeds are limited to 33.6 kps. Actual speeds may vary depending on line conditions.
Prices and specifications valid in U.S. only and subject to change without notice. All purchases are subject to availability. For a complete copy of Guarantees and Limited Warranties, contact WinBook Computer Corporation or our website at www.winbook.com/warranty.html. CD-RW, DVD-ROM and CD-ROM drives list a variable read rate. CD-RW write and re-write speeds vary and list only the maximum possible. Actual CD-RW, DVD-ROM and CD-ROM speeds will vary and are often less than the maximum possible. Weight includes battery. Actual weight and thickness may vary due to vendor components, manufacturing processes and options. Thickness may vary at certain points on the system.
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DARN GOOD SOFTWARE, DOGGONE CHEAP

EDITED BY GRACE AQUINO ILLUSTRATIONS BY EDWIN FOTHERINGHAM

FORGET PAYING $100, $75, or even $50 for software. We dug up more than 20 software gems that can help you with your day-to-day computing tasks and keep your PC in tip-top shape—and every application is either free or priced at less than $30.

We rated each program on its features, ease of use, and overall utility. We selected shareware and freeware applications that aren't demos of commercial, off-the-shelf products; don't expire after 30 days; exclude obtrusive ads; and have few "nag notes" for updates.

And while it's getting more difficult to find practical, downloadable software on the cheap, we still came across a good mix of tools, from system utilities to simple word processors to handy Microsoft Office add-ons. We encountered some fun stuff too, such as a space-combat game and a great music jukebox. So visit find.pcworld.com/12225 and download these programs. After all, who doesn't love a great bargain?

OFFICE

WORD PROCESSING WONDER

AbiWord 3.4MB / ★★★☆☆

While Microsoft's Word grows fatter with seldom-used features, AbiSource's AbiWord (www.abisource.com) holds appeal as a trim yet capable, no-cost program. It's nimble, installs quickly, and sports a simple menu. You can import Word, HTML, and Palm (.pdb) files and edit them in AbiWord (Word documents maintain formatting features such as columns). You can even save your work as a Web page. The application is strong on basic text-editing functions—complete with a word counter, headers and footers, multiple undo/redo, and squiggly red lines under misspelled words—but it's relatively light on graphics support. —*James E. Powell*

GOT MAIL?

EPrompter 700KB / ★★★★☆

The person with the most e-mail accounts wins, right? EPrompter 1.04 SR8 (www.eprompter.com) from Tiburon Technology checks your accounts at regular intervals while running in the background, makes dial-up connections as needed—and doesn't cost a dime. View up to eight password-protected e-mail accounts, including America Online, EarthLink, Juno, Yahoo, and POP3 accounts. Or to save time, read just the header. Listen for new-mail alerts, or check the color-coded tray icon to see the number of new messages. A wizard helps you set up accounts for reading and deleting mail, but it can't automatically convert settings (such as user name and password) from other clients, such as Outlook Express. —*J.E.P.*

UNCHARTED TERRITORY

Flow LT

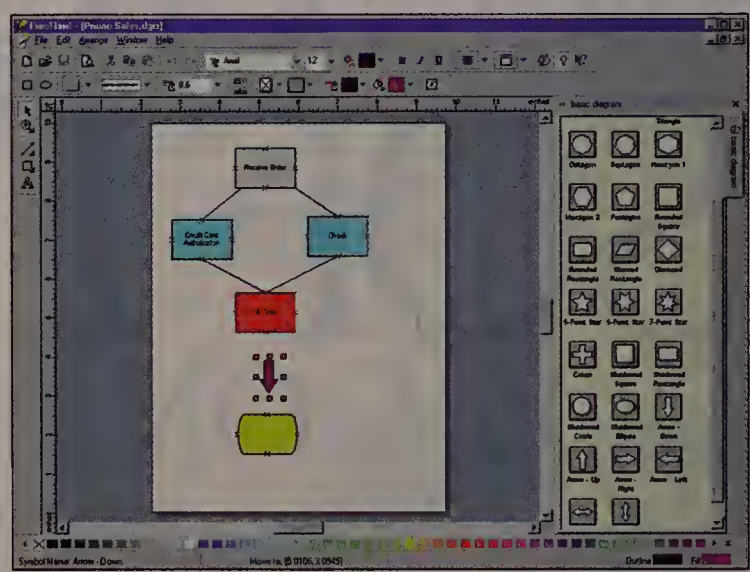
10.6MB / ★★★☆☆

Punch up even the driest text with IMSI's Flow LT 4 (www.imsisoft.com/free), a free program that lets you create simple flowcharts by dragging and dropping any of 25 symbols to a diagram and then linking them with lines that stay connected even if you later rearrange the items on the page. Add text, color, shadows, and rounded corners to shapes; and align objects vertically or horizontally. The lines don't have arrowheads built in, but Flow LT offers lots of arrow symbols. With context-sensitive pop-up help, you'll be up and running in minutes. —*J.E.P.*

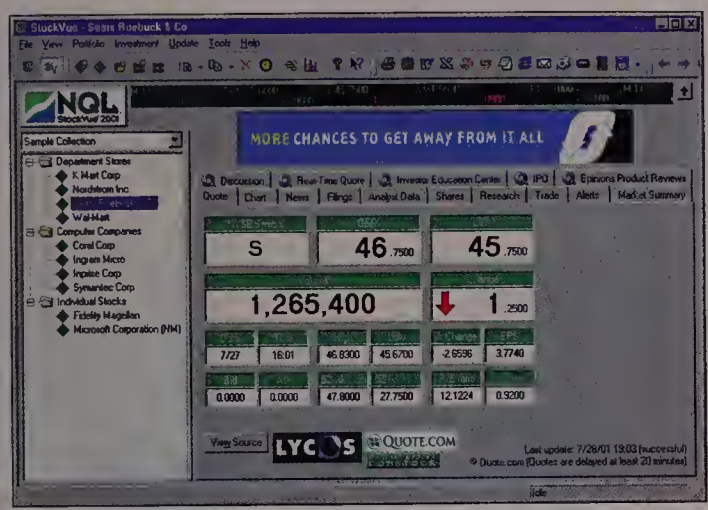
DAYS OF OUR LIVES

Happy Calendar 2MB / ★★★☆☆

Forget your troubling schedule and get Happy—Happy Calendar (www.jimjams.com/xhaca.html), that is. This free tool from Jimjams has day, week, month, and year views, plus a time line with busy times shown in red. You can display the current lunar phase, the saint of the day, or the zodiac sign. Enter recurring entries, set alarms, and search for appointments. Keep a record of your daily accomplishments or goals using the notes field,



PEP UP FLOWCHARTS: IMSI's free Flow LT program can add color, shadows, and arrow symbols to diagrams.



ASSET MANAGEMENT: StockVue's simple, tabbed interface lets you easily track your portfolio.

with subjects arranged hierarchically. The program even has a simple database for phone numbers and addresses. —*J.E.P.*

PROJECT MANAGEMENT 101

ProjeX 97 252KB / ★★★☆☆

Need a project time line but don't have the hours required to grapple with Microsoft Project? You'll love WAA's ProjeX 97 (waa-inc.com). The program downloads and installs nearly instantaneously, and its intuitive design and six-tab setup window get you started quickly. Building a new project is simple, and you can compare snapshots (views of a project's progress at specific points in time) with your current plan. The $20 registered version sets you up with time lines in days, weeks, months, and quarters (the freeware is limited to days), plus additional planning features. With ProjeX, you'll always know whether you're on track. —*J.E.P.*

DESKTOP PUBLISHING MADE EASY

Publish-It 1.3MB / ★★★★☆

Do you find creating a newsletter or brochure tedious? Poster Software's Publish-It (www.postersw.com/publish.html) makes the task fun, with text effects, color support, templates, and printing options (posters up to 5 feet square tiled over multiple pages). From its simple installation to its helpful tutorial, this $22 program packs other features: page backgrounds, gradients, and a spelling checker. Pages with flowing text, tables, or free-form shapes are easy to design, too. —*J.E.P.*

TRACK YOUR PORTFOLIO

StockVue 2001

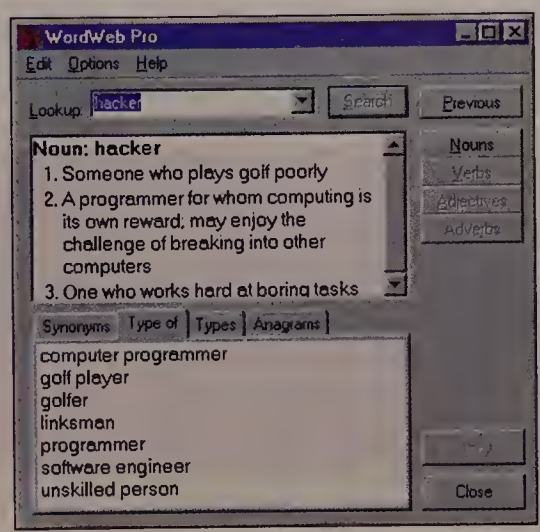
5.8MB / ★★★☆☆

For richer, for poorer—now you'll know instantly how the twists and turns of Wall Street affect your portfolio. With NQL's gratis but ad-supported StockVue (www.nqli.com), you can record your stock and mutual fund purchases, sales, and splits; view delayed data on highs and lows, bid and ask prices, and price/earnings ratios; set alerts for price and volume changes; and read company news and filings. Look at Quote.com analyst views; peruse analysts' consensus estimates; and get daily, weekly, or monthly charts (you can specify the number of days for the moving average). Drawback: The program asks for lots of personal information when you register. —*J.E.P.*

WORDS ARE CHEAP

WordSmith 2MB / ★★★★☆

Though there are plenty of document viewers for Palm handhelds and even a few apps with a small amount of editing capability, none are as full-featured as Blue Nomad's WordSmith 2.01 (www.bluenomad.com). It has paragraph, page, and tabular formatting; find and replace; bulleted lists; and many other functions. It integrates with Microsoft Word, right down to an icon on the toolbar. WordSmith's FineType lets you import and display the previously unviewable-on-a-PDA TrueType fonts. And at $30, it's a bargain to boot. —*Michael S. Lasky*



EXPAND YOUR VOCABULARY: WordWeb provides definitions, synonyms, and more.

WHAT A WAY WITH WORDS

WordWeb 4.4MB / ★★★★☆

When only the right word will do, there's WordWeb (www.wordweb.co.uk/free), a free combination dictionary and thesaurus that lets you explore words and their relationships. Enter *auto*, and the tabbed interface provides a definition and synonyms, as well as vehicle components in the Parts tab (*accelerator, bumper*) and types of cars in the Types tab (*coupe, cruiser*). WordWeb is easy to use and a far cry from your word processor's thesaurus. The $18 Pro version adds word searches with pattern matching ("?elp" finds *help, kelp,* and so on), an anagram maker, and customization options. —*J.E.P.* ▶

5 Shareware Essentials

IF YOU HAVE to limit what software you download, here are five must-haves your PC shouldn't compute without.

◆ **Cookie Crusher** 1.1MB

www.thelimitsoft.com/cookie.html

Sort the good cookies from the bad with this simple but effective $15 utility.

◆ **PowerDesk** 1.1MB

www.ontrack.com/powerdesk

File management done right: It's free, convenient, and packed with features.

◆ **Tweak UI** 65KB

find.pcworld.com/12861

Fine-tune Windows' look and feel with this free tool made by Microsoft developers (but not fully supported by the company).

◆ **WinZip** 1MB

www.winzip.com

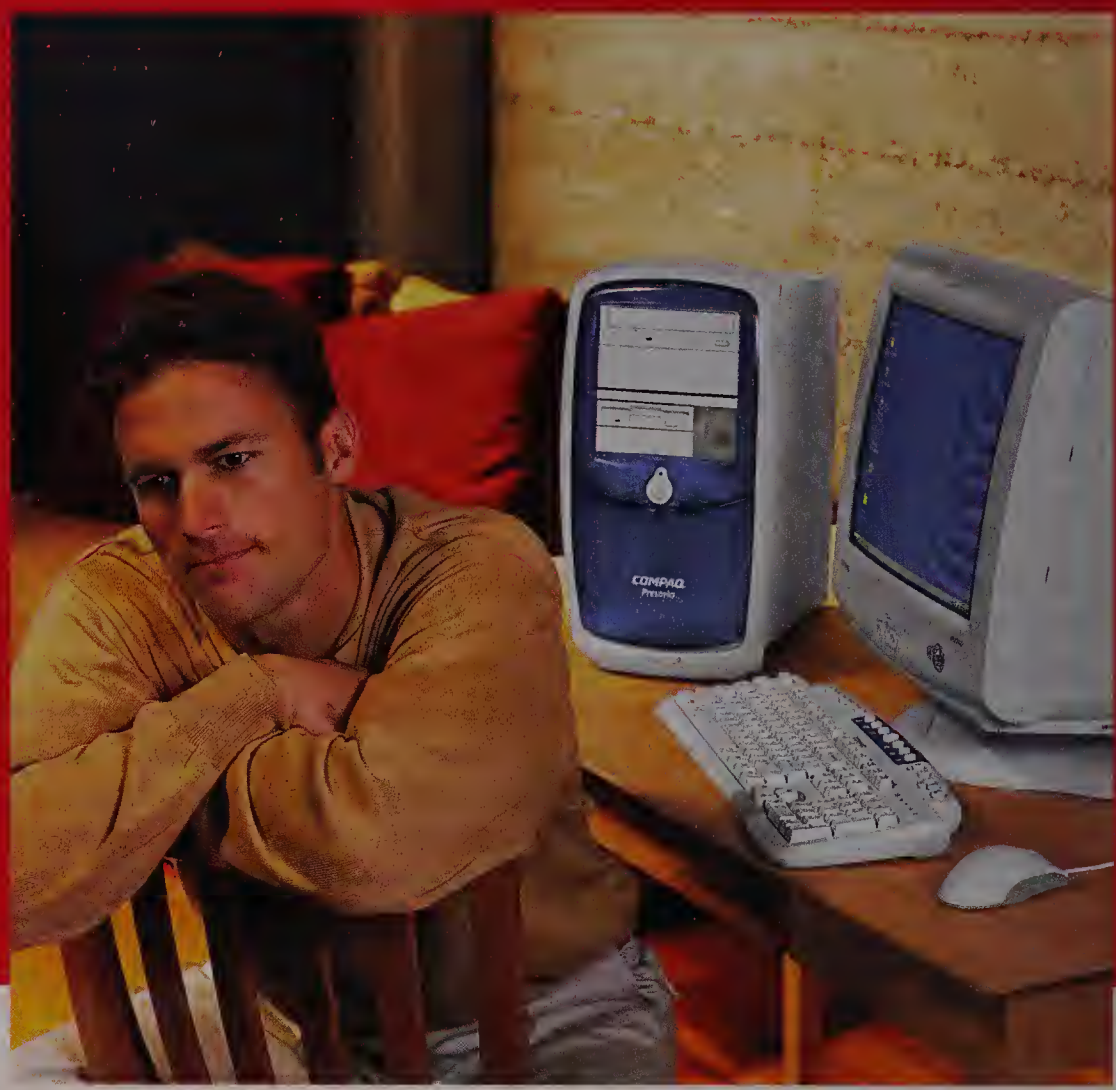
Create compressed file archives and decompress zipped files, using the no-cost WinZip utility's drag-and-drop interface.

◆ **ZoneAlarm** 2.8MB

www.zonelabs.com

Shield your PC from hacker attacks with this free security program.

BUILT ON A RATHER SIMPLE, INNOVATIVE IDEA.



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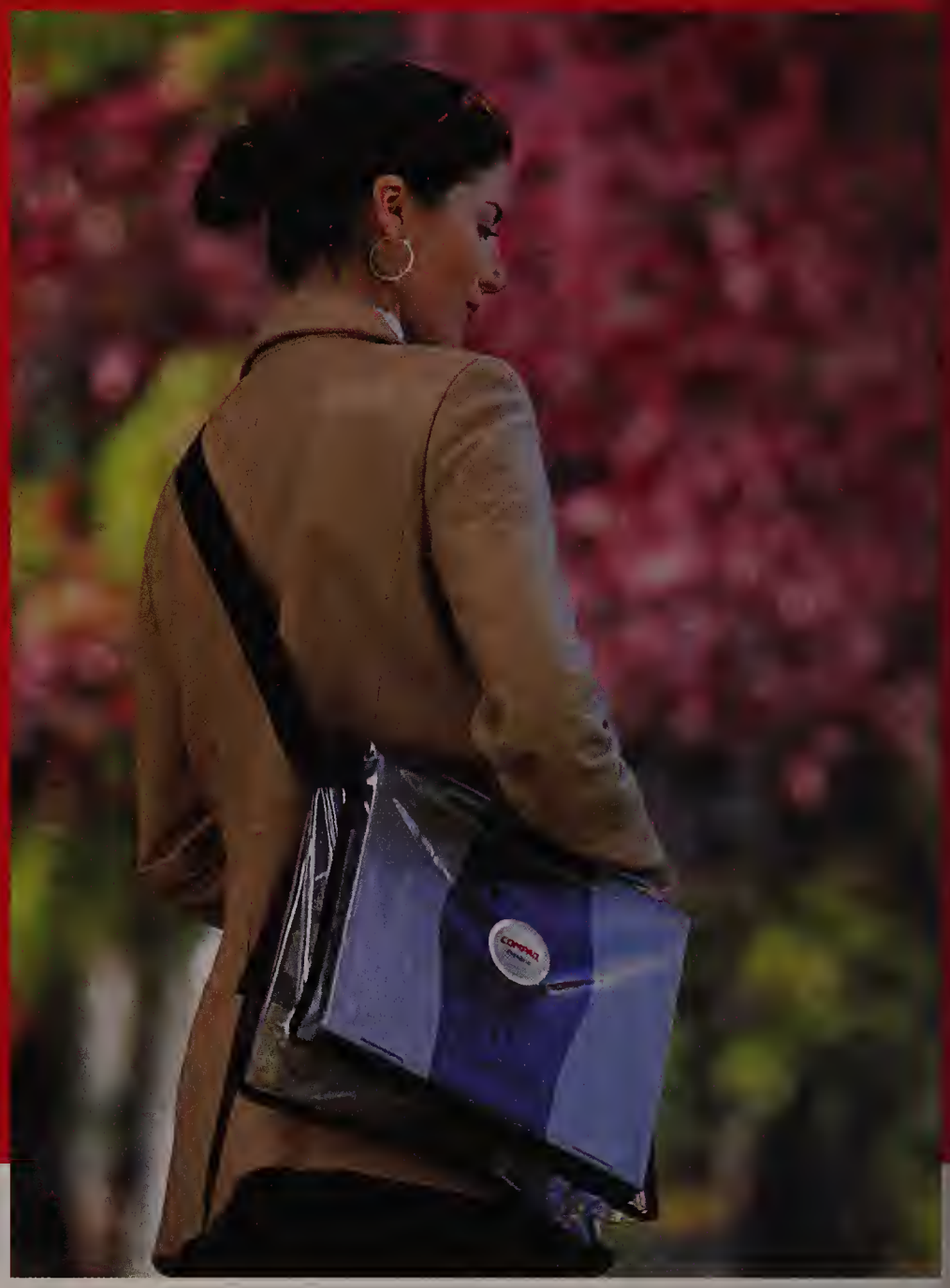

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56K ITU V.92 Modem[3] with Network Interface Card
Lilon Battery
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UTILITIES

KILL ADWARE DEAD

Ad-aware 837KB / ★★★★☆

Some programs may install files on your hard drive that secretly download ads. Makers of Web tools such as Usenet readers, instant messaging programs, and Napster clones use the advertising to support their products. But such ad programs can threaten your privacy and lead to system crashes. To be safe, download Lavasoft's free Ad-aware 5 (www.lavasoftusa.com). It scans your Windows Registry and your hard drive for traces of the ad tools and deletes them. Frequent updates keep you a step ahead of the ad-download companies. —*Andrew Brandt*

THE COOKIE PATROL

Cookie Crusher 1.1MB / ★★★½☆

Someday all browsers will make it easy to sort through the cookies that Web sites use to identify you and track your browsing habits. But I wouldn't hold my breath. In the interim, The Limit Software's $15 Cookie Crusher 2.6b (www.thelimitsoft.com/cookie.html) can help. Set it to accept or reject all cookies from a single server on a site (such as the server holding your shopping cart) or all cookies from an entire Internet domain (those cookies dished up by a company such as DoubleClick, for instance). The program tells you whether a cookie tracks your surfing, serves advertisements, or provides a shopping cart. —*Dennis O'Reilly*

TRUSTY VIRUS DEFENDER

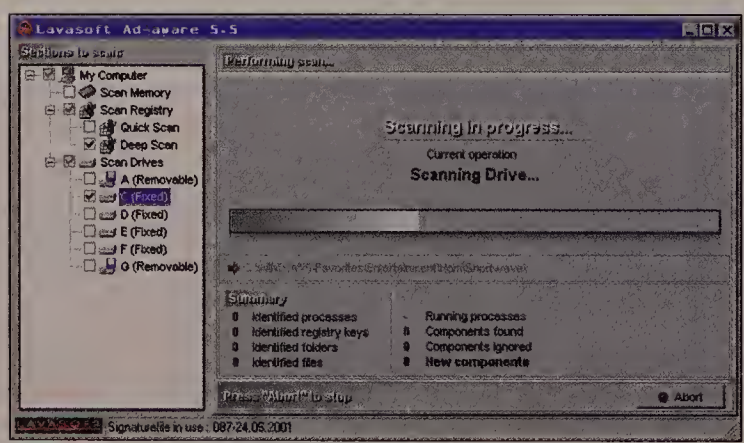
EZ Antivirus 3.9MB / ★★★★☆

For an efficient and reliable virus scanner, get ETrust's $20 EZ Antivirus (www.myetrust.com) program. In our recent tests (see find.pcworld.com/13220 for more information), it quickly scanned a virus-infested hard drive, caught every piece of nefarious code, and achieved a perfect score in repairing the infected files. The downside: It's a bare-bones application that doesn't allow you to schedule automatic scans or retrieve automatic virus-definition updates; you must remember to manually download the latest inoculations. Updates are free for the first year and $10 a year thereafter. —*Seán Captain*

FILE MANAGEMENT ON STEROIDS

PowerDesk 1.1MB / ★★★★☆

You'll never feel the need to open Windows Explorer again once you start using Ontrack's free PowerDesk 4 File Manager (www.ontrack.com/powerdesk). It has many customization features, including single- or dual-pane views, file compression and decompression, file preview, a file-sort indicator, and a powerful file finder. Unlike Explorer, PowerDesk has a toolbar with icons for all available drives, making copying and moving files a one-click snap—instead of a scrolling scavenger hunt. —*M.S.L.*



STOMP SPYWARE: Lavasoft's Ad-aware utility scans PCs and rids them of "spying" ads attached to certain programs.

SCRUBBING OFF ADS

WebWasher 1.2MB / ★★★★☆

As advertising revenues have dwindled on the Internet, the ads have gotten more aggressive. They blink, pop up, and barge into your browser page. Scrub away pesky ads with WebWasher 3 (www.webwasher.com). It blocks ads (including the ever-annoying pop-up variety), cookies, and invisible Web bugs that track your surfing. Best of all, it practices what it preaches: It's free to noncommercial users and it never pesters you to upgrade to a paid version. —*Edward N. Albro*

SHOW SOME SKIN

WindowBlinds 1.3MB / ★★★☆☆

Tired of Microsoft's taste in interfaces? Redecorate. Stardock's WindowBlinds 2.2 (www.windowblinds.net) lets you apply skins that give Windows new graphics, detailing, and colors—turning the operating system's appearance into anything from a Macintosh look-alike to a Leonardo da Vinci tribute. You can download and customize any of more than 1000 free skins, or design your own with Star- ▶

5 Tips for Hassle-Free Downloads

- **Beware of "spyware,"** ads in shareware programs that send information to advertisers. If you see banner ads in the software and prefer not to impart personal information, uninstall the program or download Ad-aware (see review, left).
- **Look for alternative download sites.** If you're having trouble downloading a program from the company's Web site, try www.pcworld.com/downloads, as well as www.download.com and www.tucows.com.
- **Download after business hours,** when there's likely to be less Web traffic. The process is quicker and easier then.
- **Read the company's policies** to be sure you're getting what you bargained for.
- **Can't get tech support from the vendor?** Check out third-party support on the Web, such as PCWorld.com's Expert Help (find.pcworld.com/12880). –*Grace Aquino*

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dock's SkinStudio. WindowBlinds is a blast, but heads up: It conflicts with certain apps, and the flashier skins bog down sub-600-MHz PCs. Both WindowBlinds and SkinStudio are free to try; they're $20 apiece to register. —*Harry McCracken*

REV UP THE WINDOWS KEY

WinKey 1.2MB / ★★★★☆

Do you use the <Windows> key on your keyboard? Chances are, you don't. On most PCs, the function of the <Windows> key is limited to opening the Start menu and some folders. But Copernic Technologies' free WinKey program (www.copernic.com/winkey) will give you a reason to start using that overlooked key. Billed as a keyboard enhancer, the software lets you create simple <Windows>-key shortcuts that launch applications, folders, Web pages, and other items, making Windows efficient and easy to use. It's a snap to program, and it supports up to 200 key combinations. —*M.S.L.*

SHELTERED SYSTEM

ZoneAlarm 2.8MB / ★★★★½

If you're constantly connected to the Web, your PC is especially vulnerable to hacker attacks. Zone Labs' free ZoneAlarm 2.6 (www.zonelabs.com) can give you some protection. It blocks attacks from the outside and guards against dangers that originate within your PC as well, preventing Internet-bound applications from opening ports into your system. ZoneAlarm also makes a digital fingerprint of authorized apps so that Trojan horses can't slip by, masquerading as trusted programs. Just before press time, Zone Labs announced version 3 (due out this month), designed to protect program components (such as DLLs) from being changed and to provide an online help function that explains security vulnerabilities in plain English. For added privacy controls, such as ad blocking and cookie management, consider buying the Pro version. —*S.C.*

PC PROTECTION: ZoneAlarm protects systems from hacker attacks and viruses.

LEISURE

SNAPPIER SNAPSHOTS

ACDSee 11.3MB / ★★★★☆

ACDSee 4 (www.acdsee.com) is a terrific image viewer, but that's only half the story—this versatile utility from ACD Systems also lets you grab pictures from your digital camera or scanner, convert file formats, create slide shows and Web albums, and do much more. Its photo-editing tools won't replace Photoshop, but you can crop and resize, fiddle with an image's contrast and color, and fix red-eye. You can use it free of charge if you register by e-mail once every 45 days. That's a fair trade-off considering that the package costs $50 otherwise. —*H.M.*

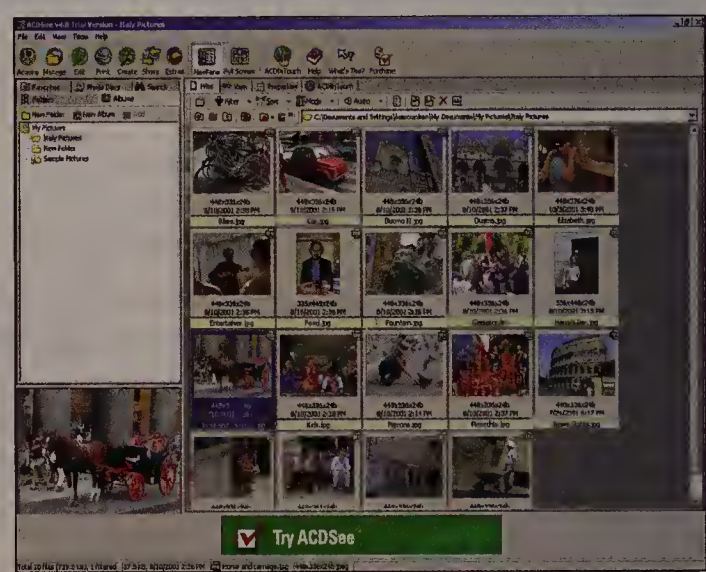


PHOTO FINESSE: ACDSee packs an array of image tools into a versatile, registration-required utility.

PLAY IT AGAIN, SAM

MusicMatch Jukebox

9.9MB / ★★★★☆

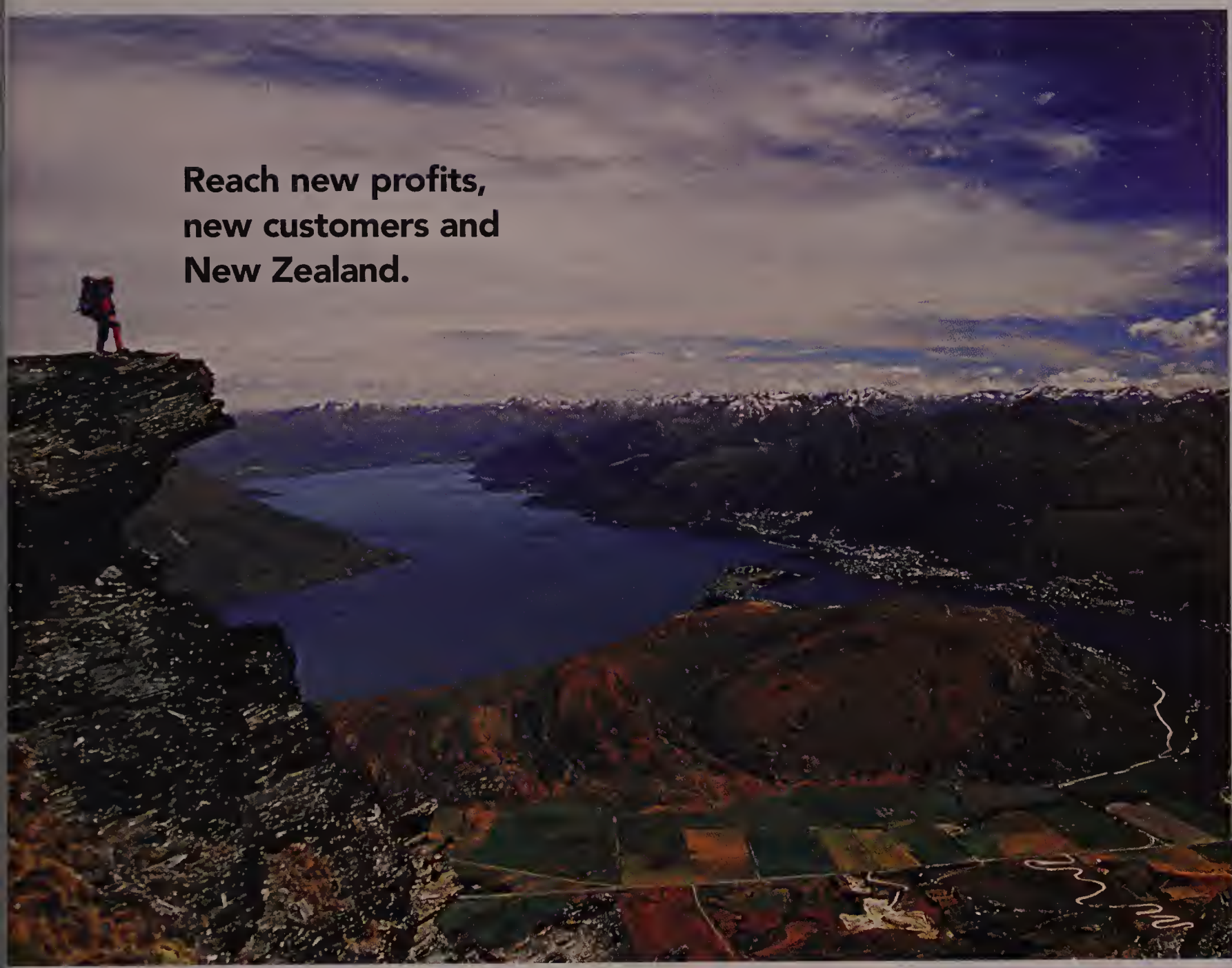
MusicMatch Jukebox Basic 7 (www.musicmatch.com) packs plenty of audio power. The streamlined interface lets you navigate your music collection and create playlists. The MusicGuide (the only place you'll see ads) has artist and album information and recommendations. If you plan to burn CDs of your favorite tracks, try the $20 Plus version, which burns CD-Recordables 12 times faster than the free version. It also lets you rip audio CDs to MP3 format faster, refine and retain your equalizer settings, and print CD labels and case liners. —*Melissa J. Perenson*

GAMING ON THE FLY

SabreWing 5MB / ★★★½☆

If you were a fan of Wing Commander, X-Wing, or other epic space-combat titles of the past decade, the frenetic 3D dogfights in SabreWing (www.sabrewing3d.com) will bring back fond memories. The best part: This fast-paced space-fighter simulation plays entirely over the Web, streaming missions to you on the fly. Just download WildTangent's free 840KB Web driver, and after a quicker-than-Flash-movies load time, you'll be blasting aliens with the best of them. —*Eric Dahl* ■

James E. Powell edits OfficeLetter.com, a site devoted to Microsoft Office users. All other contributors are editors for PC World.



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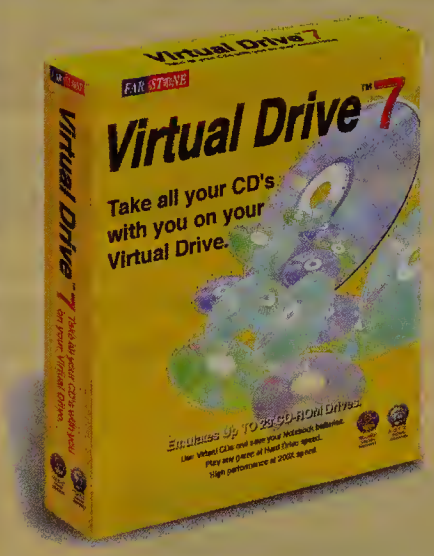

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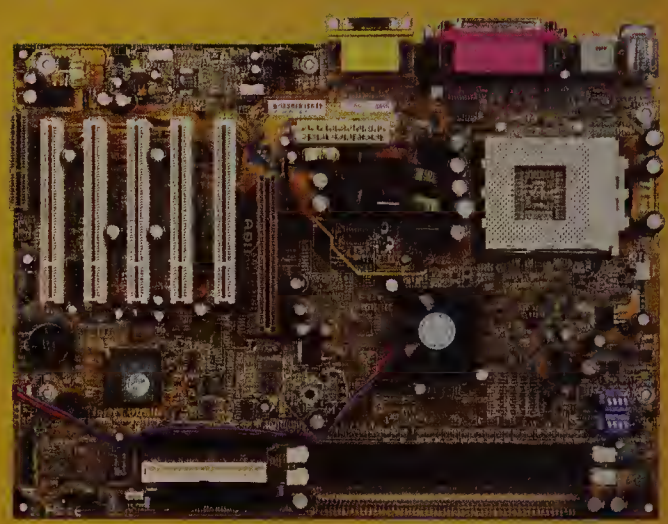

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Top 10 Printers
The Minolta-QMS Magicolor 6110 produces vibrant color images.

179

Top 10 CD-RW Drives
New drives from QPS (left), CenDyne (center), and LG Electronics make the Top 10.

Top Speed and Bargains to Boot

THE BEST Hardware Buys

Intel's Processor-M makes its debut on the *Top 15 Notebook PCs* chart this month in four new power laptops. Of the four, IBM's ThinkPad T23 notched the highest PC WorldBench 2000 score we've seen from a notebook. Other charts in the *Top 100* feature great deals—for instance, our *Top 10 Graphics Boards* chart hosts the cheapest board we've encountered, a $79 card from MSI. As part of our holiday shopping guide, look for our roundups of home PCs and digital cameras on page 106 and page 90, respectively.

Freelance writers Dan Littman, Joel Strauch, and Carla Thornton, and PC World *editors Richard Baguley, Rebecca Freed, Alexandra Krasne, Heather Morra, Kalai Murugesan, Melissa J. Perenson, and Alan Stafford contributed to this month's* Top 100 *section. In addition, Ulrike Diehlmann, Robert James, Elliott Kirschling, Jeff Kuta, Danny W. Lam, Tony K. Leung, and Thomas Luong of the PC World Test Center performed testing, with support from Julio Giannobile and Julian Weatherby.*

PHOTOGRAPHS: MARC SIMON

Top 10 Graphics Boards

With a $79 price tag, the MSI MX400 Pro2-32S is the cheapest graphics board ever to appear on the chart.

177

166

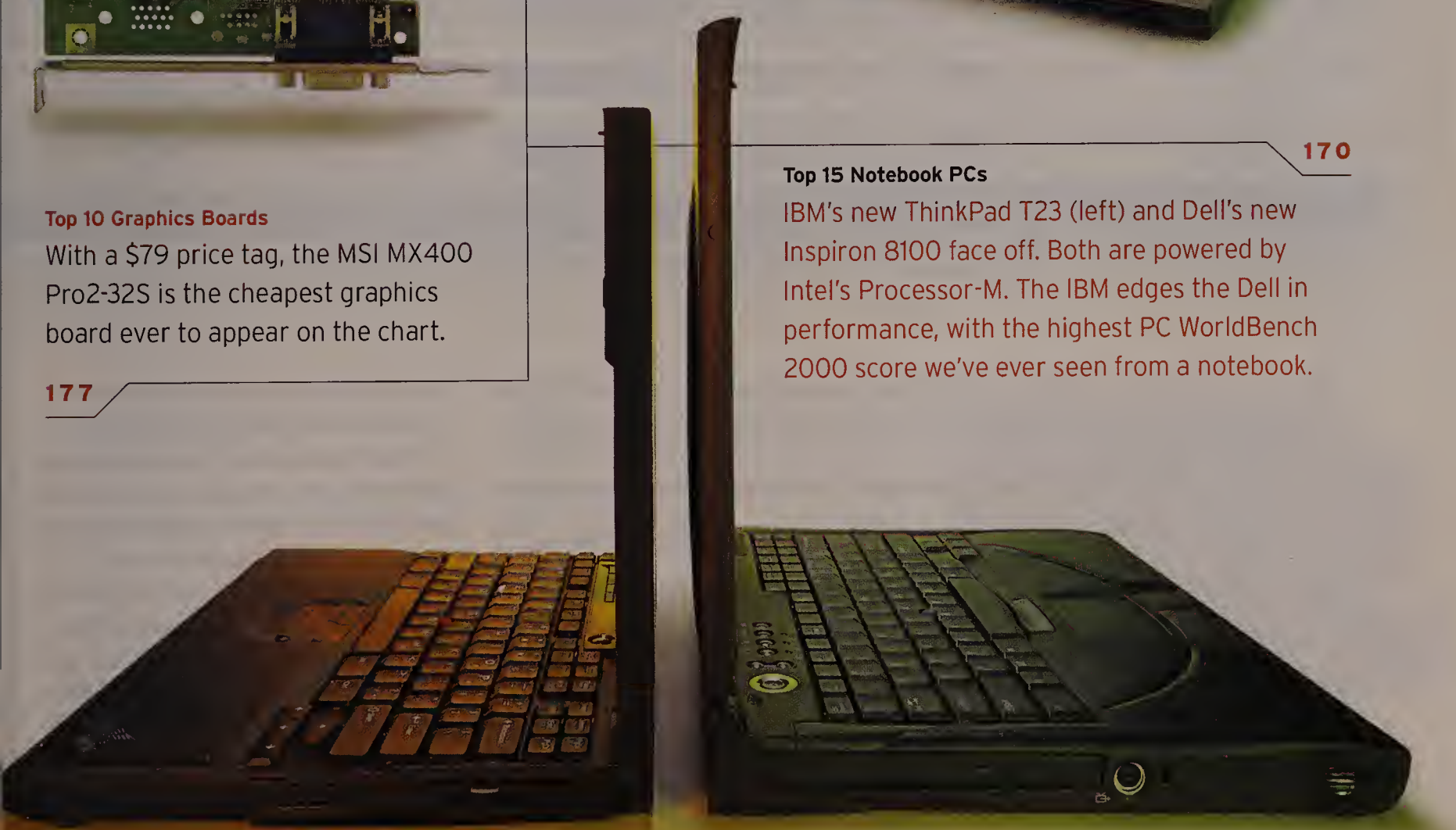
Top 10 Power PCs

An attractive 17-inch LCD display and useful management tools hoist HP's new Vectra VL420 onto the number nine spot on the chart.

170

Top 15 Notebook PCs

IBM's new ThinkPad T23 (left) and Dell's new Inspiron 8100 face off. Both are powered by Intel's Processor-M. The IBM edges the Dell in performance, with the highest PC WorldBench 2000 score we've ever seen from a notebook.



YOUR GUIDE TO THE TOP 100

EACH MONTH WE TEST a large number of PCs, printers, monitors, and other products, and compare them with previously reviewed products. Only the best products land on the charts, which are refreshed monthly. System configurations are shown as tested.

The overall rating for each product is calculated on a 100-point scale, and reflects results from our hands-on evaluations and performance tests. A 90-point score is exceptional, while one in the 70s is above average.

The PC WorldBench 2000 score is a measure of how fast a PC can run a mix of common business applications as compared with our baseline machine, an HP Pavilion 8380 with a Pentium II-400 CPU, 96MB of RAM, and an 8GB hard drive. For example, a PC that scores 200 is twice as fast as the baseline system.

Reliability and service scores are based on surveys of *PC World* readers or on anonymous support calls made by *PC World* staff. The policies score is based on vendor support policies (not shown on charts).

Please see find.pcworld.com/15720 for more details on how we compile charts for the *Top 100*.

TOP 10 POWER PCs

	POWER SYSTEM	Issue tested	Overall rating	Street price (9/14/01)	PC WorldBench 2000 performance score[1] (Faster ▶)	Comments
1	Best BUY Dell Dimension 8200 find.pcworld.com/13160	Nov 01	84	Expensive $2899	Windows 2000 Very good 236	Pricey but still in first place with solid performance, top-of-the-line components, and a distinctive case design. (★★★★☆ Nov 01)
2	Best BUY Polywell Poly 815TS-1260 find.pcworld.com/13161	Nov 01	83	Average $2150	Windows 2000 Very good 236	Intel's Processor-M (for mobile PCs) powers unit to same PC WorldBench 2000 score as the Dimension 8200's. (★★★☆☆ Nov 01)
3	Sys Performance 1400TD find.pcworld.com/11341	Oct 01	83	Average $1774	Windows 2000 Outstanding 245	Fastest model on chart comes with a rich, attractive display but scant software. Price sheds $141 this month. (★★★☆☆ Oct 01)
4	Xi Computer 1400 MTower SP find.pcworld.com/10126	Sept 01	83	Expensive $2799	Windows 2000 Outstanding 242	Fast system has a sharp display, two 41GB hard drives linked with an IDE RAID card, and a high price to match. (★★★★☆ Sept 01)
5	NuTrend Athlon Ultra 2 find.pcworld.com/11342	Oct 01	82	Inexpensive $1699	Windows 2000 Very good 233	Performance matches that of other speedy Athlon-based PCs; has an IEEE 1394 card with three ports. (★★★☆☆ Oct 01)
6	Dell OptiPlex GX400 find.pcworld.com/10360	July 01	81	Average $2126	Windows 2000 Average 203	Efficiently designed corporate system comes with an excellent display and a combination DVD/CD-RW drive.
7	Gateway Professional S1800 find.pcworld.com/13162	Nov 01	79	Average $2168	Windows 2000 Very good 229	Speedy, well-designed; tool-less access to components; sharp flat-panel display. Price falls $340 this month. (★★★★☆ Nov 01)
8	MicronPC Millennia Max XP2 find.pcworld.com/10361	June 01	78	Average $1977	Windows 2000 Average 210	Attractive display, ample documentation, and still-speedy Athlon-1200 performance.
9	HP Vectra VL420 find.pcworld.com/15240	NEW	78	Very expensive $3028	Windows 2000 Good 217	High-priced corporate PC uses Intel's 845 chip set; has management features and an impressive flat-panel LCD monitor. ★★★★½
10	Micro Express MicroFlex 1500A find.pcworld.com/15241	NEW	77	Very inexpensive $1299	Windows 2000 Average 208	Decent performance and a roomy interior, but subpar monitor mars the package. ★★★☆☆
			Percent of overall rating ▶	10 percent	25 percent	

See find.pcworld.com/10860 for details on *PC World*'s Star Ratings.

[1] A system's performance word score is relative to the scores earned by other PCs running the same operating system. See "Your Guide to the Top 100" on page 165 for more details.

DELL'S DIMENSION 8200 retains the top spot, while Polywell's Poly 815TS-1260 moves up to nab the number two Best Buy for the first time. New systems tested this month include HP's Vectra VL420 in ninth place and Micro Express's MicroFlex 1500A at number ten. The Vectra sports Intel's new 845 chip set and a well-designed chassis. The MicroFlex has the lowest price on the chart and achieves respectable performance with its 1.5-GHz P4 CPU, but it comes with a mediocre display.

NEW ON THE CHART

9 HP Vectra VL420

NEW **The fine points:** Intel's new 845 chip set allows PC manufacturers to pair Pentium 4 CPUs with SDRAM instead of more-expensive RDRAM. The result? HP's latest Vectra, packing a 2-GHz P4 processor and 256MB of PC133 memory, earned a PC WorldBench 2000 score of 217—that's 14 points higher than the average for other systems we've tested with the same configuration, but 13 points below the average for 2-GHz Pentium 4 systems using RDRAM. The Vectra VL420 ships with HP's E-DiagTools and TopTools for remote maintenance and control, as well as Rembo's Auto Deploy and Auto Backup tools, which let administrators back up and install drive images remotely. In addition, the HP L1720 17-inch LCD monitor renders rich colors and sharp text at its native resolution of 1280 by 1024. The monitor also pivots for viewing in either landscape or portrait mode.

Despite its advantages, the big LCD display helps push the price of this system over $3000. Another drawback is that the speakers integrated into the system case produce lackluster, tinny sound.

Though the vents on the front of the gray-and-blue desktop case are reminiscent of the grille of a Ford truck, the case sports some useful design features as well, including chassis intrusion detection, two front-mounted USB ports, and easy interior access. To open the system, just lift a latch handle and pop off the top. Inside, you can get to the three open PCI slots, one open internal bay, and one open externally accessible bay sans tools. You can insert drives after you snap off the front panel, and you can add expansion cards after pressing a green tab to remove a support cover. With HP's Ultraflow cooling system, all the internal components stay cool with very little noise.

Visit find.pcworld.com/15242 for reviews of all products ranked in this chart or tested this month.

BASE CONFIGURATION							Extra features	Design/ documentation	Vendor's reliability/ service
CPU	RAM (MB/type)	Hard drive (GB)	Monitor size (diagonal inches)	Graphics board	Case type [2]	Open bays/slots			
Pentium 4-2000	256/RDRAM	100	19	Dell GeForce3	Midsize tower	2/3	**Good:** 16X DVD-ROM drive, 16X/10X/40X CD-RW drive, network adapter, Microsoft Office XP Small Business Edition	Good/Average	Outstanding/Fair
Pentium III-M-1260	256/SDRAM	80 [3]	19	Leadtek WinFast GeForce3	Midsize tower	5/3	**Outstanding:** 16X DVD-ROM drive, 12X/8X/32X CD-RW drive, V.90 modem, network adapter, Lotus SmartSuite Millennium Edition	Good/Average	[4]/Fair [4]
Athlon-1400	256/SDRAM	61.5	19	ATI Radeon	Midsize tower	4/4	**Good:** 16X DVD-ROM drive, 16X/10X/40X CD-RW drive, network adapter	Good/Poor	[4]/Fair [4]
Athlon-1400	256/SDRAM	80 [3]	19	Leadtek WinFast GeForce3	Tower	6/3	**Very good:** 12X/8X/32X CD-RW drive, network adapter, Microsoft Office XP Small Business Edition	Good/Good	[4]/Fair [4]
Athlon-1400	256/SDRAM	80	19	Leadtek WinFast GeForce3	Midsize tower	3/1	**Outstanding:** 16X DVD-ROM drive, 16X/10X/40X CD-RW drive, V.90 modem, network adapter	Good/Good	[4]/Fair [4]
Pentium 4-1400	256/RDRAM	40	19	Dell GeForce2 GTS	Midsize tower	4/5	**Very good:** 8X DVD-ROM and 8X/4X/32X CD-RW combination drive, network adapter, Wake-on-LAN, Dell LegacySelect	Good/Average	Outstanding/Fair
Pentium 4-1800	256/RDRAM	40	15 (LCD)	VisionTek GeForce3	Midsize tower	3/3	**Very good:** 12X/10X/32X CD-RW drive, network adapter, Microsoft Office XP Small Business Edition	Average/Average	Good/Fair
Athlon-1200	128/SDRAM	40	19	Creative Labs GeForce2 Ultra	Midsize tower	3/3	**Very good:** 12X/10X/32X CD-RW drive, V.90 modem, Microsoft Office 2000 Small Business Edition	Good/Average	Good/Good [4]
Pentium 4-2000	256/SDRAM	80	17 (LCD)	HP GeForce2 MX-400	Desktop	2/3	**Outstanding:** 16X/10X/32X CD-RW drive, network adapter, Wake-on-LAN, HP's E-Diag Tools, ProtectTools 2000, TopTools software	Good/Average	Good/Fair
Pentium 4-1500	256/RDRAM	40	17	Leaktek WinFast GeForce2 Ultra	Midsize tower	3/4	**Outstanding:** 12X DVD-RDM drive, 12X/8X/32X CD-RW drive, V.90 modem, network adapter	Good/Average	[4]/Fair [4]
			10 percent				10 percent	15 percent	30 percent

[2] We define vertical cases as towers (taller than 20 inches), midsize towers (15.5 to 20 inches), or minitowers (shorter than 15.5 inches); and horizontal cases as desktops (5 inches or taller) or compacts (shorter than 5 inches).

[3] Total space on two hard drives.

[4] Insufficient data to give a rating, or the rating is derived from the vendor's Reliability and Service survey scores for its home PCs.

The upshot: The HP Vectra VL420 doesn't come cheap, although cost-saving seems to be the point of using the 845 chip set and SDRAM. However, its well-designed case, excellent LCD monitor, and extensive suite of management tools will suit medium-size or large businesses that need a versatile, easy-to-manage system.

10 Micro Express MicroFlex 1500A

NEW **The fine points:** Although 1.5 GHz is not the fastest flavor of Pentium 4 available, a P4-1500 CPU was enough to get the job done in the MicroFlex 1500A. The processor drove our test system, with 256MB of PC800 RDRAM, to a score of 208 on our PC WorldBench 2000 tests—the highest mark we've seen among systems of its configuration, and a number that just one other machine has achieved.

To open the standard gray-and-beige MicroFlex midsize tower, you remove a single thumbscrew from the top panel, which you pop off. You can then snap the sturdy metal side panel in and out with relative ease. The interior cabling is bundled, but it still clutters the rear, potentially hampering the upgrade process. Three externally accessible bays and four PCI slots are open for expansion. The spiral-bound system manual covers the basics of troubleshooting and general computing with information specific to the MicroFlex line. Though the CD-RW drive's 12X/8X/32X speed rating is half as fast as that of the newest models available, the drive is reasonably current. Both a modem and a network interface are provided for connectivity to the Internet, an office network, or a broadband modem.

On the downside, the 17-inch Tatung C7ES monitor produces bland colors and blurry text at 1024 by 768 resolution. Text becomes almost impossible to read at the maximum resolution of 1280 by 1024.

THE MICRO EXPRESS MicroFlex 1500A offers good performance for the price.

And though some ports on the rear of the PC are color-coded, many are unlabeled, which could make setup more difficult.

The upshot: The MicroFlex 1500A offers solid performance and ample expansion room at an affordable price. Its design is prosaic, however, and buyers would be wise to purchase a better monitor than the one accompanying our system. ▶

TOP 10 VALUE PCs

	VALUE SYSTEM	Issue tested	Overall rating	Street price (9/14/01)	PC WorldBench 2000 performance score [1] (Faster)	Comments
1	Best BUY NuTrend Athlon Mega 2 find.pcworld.com/10366	Aug 01	84	Inexpensive $1069	Windows Me Outstanding 178	Speedy Windows Me system holds the top spot for a second month. Ships with an IEEE 1394 card.
2	Best BUY Micro Express MicroFlex 1200C find.pcworld.com/15221	NEW	83	Inexpensive $999	Windows 2000 Very good 224	Offers strong performance and ample expansion room for an affordable price, but needs a better monitor. ★★★½☆
3	Tangent Valera PC find.pcworld.com/13182	Nov 01	82	Average $1399	Windows 2000 Outstanding 236	Fast; dual monitor capability; integrated IDE RAID controller on motherboard for hooking up two hard drives. Price falls $46. (★★★☆☆ Nov 01)
4	ABS Conquest GL find.pcworld.com/10368	Apr 01	80	Inexpensive $989	Windows Me Good 160	Impressive monitor and simple assembly aided by color-coded ports and a setup poster. Price drops $110.
5	Dell OptiPlex GX150 find.pcworld.com/10367	June 01	80	Average $1312	Windows 2000 Good 190	Ships with corporate management and security features. Designed for easy access and expansion. Price lowers by $74.
6	Polywell Poly 830K7-1000 find.pcworld.com/10370	Aug 01	80	Inexpensive $1100	Windows Me Good 161	Includes partition backup software along with a removable hard drive that extracts easily through the front of the tower. Sheds $50 from its price.
7	Premio Apollo 815EP find.pcworld.com/11343	Oct 01	78	Very inexpensive $899	Windows Me Good 161	Quick and inexpensive Windows Me system, with no-frills components and lots of internal space. (★★★☆☆ Oct 01)
8	Dell Dimension 2100 find.pcworld.com/13183	Nov 01	76	Inexpensive $999	Windows 2000 Average 158	Stylish system offers tool-less access to drives and bays but limited expansion possibilities; $119 price cut. (★★★☆☆ Nov 01)
9	Sys TaskMaster 950D find.pcworld.com/11461	Oct 01	76	Average $1206	Windows 2000 Good 191	Duron-950 PC is a nice step up from Duron-850 machines; includes a good monitor. Price falls $62 this month. (★★★☆☆ Oct 01)
10	HP E-pc C10 find.pcworld.com/10122	Sept 01	74	Average $1498	Windows 2000 Good 189	Hefty corporate tools—including manageability software, a case lock, and a rear port-control system—but little room to grow. (★★★½☆ Sept 01)
			Percent of overall rating ▶	20 percent	20 percent	

See find.pcworld.com/10860 for details on *PC World*'s Star Ratings.

[1] A system's performance word score is relative to the scores earned by other PCs running the same operating system. See "Your Guide to the Top 100" on page 165 for more details.

THE REIGNING CHAMP of the value chart, NuTrend's Athlon Mega 2, hangs on to the top spot for a second month, thanks to its swift performance and low price. Tangent's Valera PC moves down a notch to third as Micro Express's new MicroFlex 1200C nabs the second Best Buy. The MicroFlex 1200C delivers robust performance, but it's still not as fast as the Valera PC, which has the highest PC WorldBench 2000 score on the chart. Six of the systems in the Top 10 enjoy price drops this month, but none larger than $119. Dell's OptiPlex GX150, previously a long-standing Best Buy, stays on the chart for the seventh month in a row.

NEW ON THE CHART

2 Micro Express MicroFlex 1200C

Best BUY NEW **The fine points:** Powered by a 1.2-GHz Athlon CPU and 256MB of 266-MHz DDR memory, the MicroFlex 1200C posted a score of 224 on our PC WorldBench 2000 tests—about average for similarly configured systems running Windows 2000, and eight points above the average for 1.7-GHz Pentium 4–based systems. A quick-setup poster and color-coded, icon-labeled rear ports help make system assembly simple.

To open the standard gray-and-beige MicroFlex midsize tower, you must first loosen a single thumbscrew on the top panel, remove that panel, then pop off the sturdy side panel (which repositions smoothly). Inside, three open PCI slots and three open externally accessible drive bays provide ample expansion room. Most cabling remains bundled and out of the way (two sound-card cables do block access to one PCI slot). The spiral-bound system manual contains a thorough glossary, but it covers the entire MicroFlex line and is not specific to this system. (The same manual is available on an included CD-ROM in PDF form.) The 8X/4X/32X CD-RW drive, although a bit slow by current standards, is a welcome component at this PC's $999 price. The contoured Microsoft Natural keyboard allows for quiet, comfortable typing.

On the downside, the monitor this system comes with could be better. The 17-inch Tatung C7ES rendered vibrant colors, but text looked blurry at 1024 by 768 resolution and became difficult to read at the maximum resolution of 1280 by 1024.

Visit find.pcworld.com/15220 for reviews of all products ranked in this chart or tested this month.

BASE CONFIGURATION									
CPU	RAM (MB/type)	Hard drive (GB)	Monitor size (diagonal inches)	Graphics	Case type [2]	Open bays/slots	Extra features	Design/ documentation	Vendor's reliability/ service
Athlon-1333	128/ SDRAM	40	19	Leadtek WinFast GeForce2 MX	Midsize tower	4/1	**Very good:** 16X DVD-ROM drive, V.90 modem, network adapter, Corel WordPerfect Office 2000	Good/ Outstanding	[3]/Fair [3]
Athlon-1200	256/ SDRAM	40	17	Asus AGP-V7700	Midsize tower	3/3	**Outstanding:** 12X DVD-ROM drive, 8X/4X/32X CD-RW drive, V.90 modem, network adapter	Good/ Average	[3]/Fair [3]
Athlon-1333	256/ SDRAM	40	19	Matrox Millennium G450	Midsize tower	5/3	**Good:** 12X DVD-ROM drive, network adapter	Good/ Average	[3]/Fair [3]
Athlon-1100	128/ SDRAM	30	19	Gigabyte TNT2 M64	Midsize tower	4/2	**Very good:** 16X DVD-ROM drive, V.90 modem, network adapter, Corel WordPerfect Office 2000	Very good/ Outstanding	[3]/Fair [3]
Pentium III-933	128/ SDRAM	20	17	Dell TNT2 Pro	Desktop	0/2	**Good:** 8X/4X/32X CD-RW drive, network adapter, Wake-on-LAN, Dell LegacySelect, OpenManage software	Average/ Average	Outstanding/ Fair
Athlon-1000	256/ SDRAM	40	17	MicroStar MS-8818	Midsize tower	3/4	**Outstanding:** 16X DVD-ROM drive, 12X/10X/32X CD-RW drive, V.90 modem, network adapter	Good/ Average	[3]/Fair [3]
Pentium III-1000	128/ SDRAM	30	17	ATI Rage Fury Pro	Midsize tower	5/5	**Good:** 22X-52X CD-ROM drive, network adapter, Intel LANDesk client manager, Microsoft Office XP Small Business Edition	Good/ Good	[3]/Fair [3]
Celeron-900	128/ SDRAM	20	17	Integrated Intel 810	Minitower	1/2	**Average:** 24X-48X CD-ROM drive, network adapter, Microsoft Office XP Small Business Edition	Good/ Good	Outstanding/ Fair
Duron-950	128/ SDRAM	41	19	Matrox Millennium G450	Minitower	2/2	**Good:** 12X/10X/32X CD-RW drive, network adapter	Average/ Poor	[3]/Fair [3]
Pentium III-1000	256/ SDRAM	40	17	Integrated Intel 815	Compact	0/0	**Average:** 24X-40X CD-ROM drive, network adapter, Wake-on-LAN, HP's E-DiagTools, TopTools management software	Average/ Average	Good/ Fair
10 percent							10 percent	10 percent	30 percent

[2] We define vertical cases as towers (taller than 20 inches), midsize towers (15.5 to 20 inches), or minitowers (shorter than 15.5 inches); and horizontal cases as desktops (5 inches or taller) or compacts (shorter than 5 inches).

[3] Insufficient data to give a rating, or the rating is derived from the vendor's Reliability and Service survey scores for its home PCs.

The upshot: Budget-minded buyers who are looking for top speed might well consider the MicroFlex 1200C. But we recommend that you upgrade the display—Micro Express offers other 17-inch and 19-inch options—even though doing so will increase the package price.

ALSO OF NOTE

TWO ENTRIES from vendors new to the PC World Test Center show promise, but not enough punch to gain entry to the chart. Brite Computer's $1799 Pollux looks sharp, with a black color scheme extending from the midsize tower to the matching keyboard and the 17-inch ViewSonic E70FB monitor. Its wide-ranging software bundle includes Microsoft Works Suite 2000, Streets and Trips 2000, and Home Publishing. However, no system manual is included, and the Pollux's 1.4-GHz P4 CPU and 256MB of RDRAM, running Windows 2000, could muster only a 192 score on our PC WorldBench 2000 tests. That places it 11 points below similarly configured systems and only 1 point above systems equipped with 128MB of RAM.

Another all-black system, PC Power and Cooling's $1649 SleekLine 1000, has a pizza-box-size case designed for mounting under a desk (with an optional $39 bracket). Other perks: a quiet power supply and an attractive 15-inch NEC MultiSync LCD1530V flat-panel display. Like the Pollux, however, the SleekLine lacks a comprehensive system manual, and upgrades are limited by the single open internal drive bay and two PCI slots—in a case that is too short to house even half-height expansion cards. Furthermore, support hours for the system are limited to just 13 hours on weekdays, with no support on weekends. As for performance, the SleekLine 1000 posted a 150 score on our PC WorldBench 2000 tests—about four points below the average for PIII-1000 systems with 128MB of RAM running Windows 2000. But it's a decent score nonetheless, especially for a system with integrated graphics that shares main memory. ▶

THE MICRO EXPRESS MicroFlex 1200C offers strong performance and plenty of room to expand.

TOP 15 NOTEBOOK PCs

	POWER NOTEBOOK	Issue tested	Overall rating	Street price (9/14/01)	PC WorldBench 2000 performance score[1] (Faster ▶)	Comments
1	Best BUY Dell Inspiron 8100 find.pcworld.com/14880	NEW	90	Inexpensive $2413	Windows 2000 Outstanding 197	This thick, dark-gray desktop replacement is built for multimedia, with a GeForce2 Go graphics card plus IEEE 1394 and S-Video ports. ★★★★☆
2	Toshiba Satellite 3005-S403 find.pcworld.com/15342	NEW	89	Inexpensive $2199	Windows Me Very good 154	Midsize, black-and-silver unit with one modular bay on the front is a well-rounded laptop for consumers. ★★★☆☆
3	IBM ThinkPad T23 find.pcworld.com/14881	NEW	88	Expensive $3367	Windows 2000 Outstanding 212	Equipped with a whopping 48GB hard drive and Intel's speediest mobile processor, this is the fastest laptop we've tested. ★★★★½
4	HP Pavilion N5470 find.pcworld.com/12847	Nov 01	85	Inexpensive $2199	Windows Me Very good 149	The Athlon processor helps keep the price down. This laptop has great audio controls, with see-in-the-dark buttons. (★★★☆☆ Nov 01)
5	Acer TravelMate 743TLV find.pcworld.com/14860	NEW	83	Average $2599	Windows 2000 Outstanding 199	A matte dark-gray midsize laptop with a fine all-in-one design, and a fingerprint reader to help foil data thieves. ★★★½☆
	VALUE NOTEBOOK	Percent of overall rating ▶		15 percent	20 percent	
1	Best BUY Dell Latitude C600 find.pcworld.com/10450	June 01	80	Expensive $2486	Windows 2000 Very good 164	Corporate notebook comes ready for wireless networking and performs above average for its processor class.
2	Best BUY Compaq Presario 1800 find.pcworld.com/10446	Sept 01	79	Average $2099	Windows Me Outstanding 151	Sleek black-and-silver notebook offers long battery life and doubles as a jukebox with an array of CD-player controls. (★★★☆☆ Sept 01)
3	Enpower ENP-325W2 find.pcworld.com/10454	Feb 01	78	Average $1799	Windows Me Very good 145	Utilitarian system simplifies access to components. Overhanging screen panel makes the unit awkward to carry.
4	MicronPC TransPort GX+ find.pcworld.com/10453	Apr 01	78	Average $2250	Windows 2000 Average 154	Handsome notebook accepts affordable expansion components. Performance and battery life are unimpressive, however.
5	Chem USA ChemBook 3830 find.pcworld.com/12840	Nov 01	78	Average $1499	Windows Me Very good 143	All-in-one makes a nice stand-alone CD player. Battery, hard drive, and memory could be easier to access. (★★★☆☆ Nov 01)
6	WinBook J1 find.pcworld.com/10457	July 01	77	Average $1597	Windows Me Very good 147	Lightweight laptop pumps impressive speed and battery life from a desktop Pentium III processor.
7	Micro Express NP4800D find.pcworld.com/10455	Mar 01	77	Inexpensive $1399	Windows 98 SE Good 139	Well-appointed for the price, this laptop permits easy upgrading. Documentation is vague and sometimes misleading.
8	HP Omnibook 500 find.pcworld.com/10456	Mar 01	76	Average $2149	Windows 2000 Average 149	Ultraportable becomes a featherweight after you remove base unit, which provides two modular bays and most port connections.
9	Fujitsu LifeBook S Series find.pcworld.com/12841	Nov 01	76	Expensive $2599	Windows 98 SE Good 138	Lightest notebook with an internal modular bay we've seen; includes a snap-on docking foot with legacy ports. (★★★½☆ Nov 01)
10	Gateway Solo 3450 find.pcworld.com/15380	NEW	75	Expensive $2599	Windows 98 SE Very good 145	Slender 3-pound portable morphs into full-size notebook with snap-on docking base. Narrow keyboard feels a little shallow. ★★★½☆
		Percent of overall rating ▶		20 percent	15 percent	

See find.pcworld.com/10860 for details on *PC World*'s Star Ratings.

[1] Performance word scores reflect comparisons of PCs in the same category (power or value) running the same operating system. See "Your Guide to the Top 100" on page 165 for more details.

NEW PORTABLES EQUIPPED WITH Intel's high-powered Pentium III Processor-M CPU nearly pulled off a clean sweep of our power chart this month. The new processor's bus speed increases from 100 MHz (the PIII chip's standard) to 133 MHz, and the secondary cache doubles to 512KB. The top-rated Dell Inspiron 8100, which carries a PIII-M-1000/733 chip, posted a PC WorldBench 2000 score of 197, a 7 percent improvement in performance over PIII-1000/700 notebooks.

Though the Inspiron 8100 wasn't the fastest new M-chip–equipped laptop we tested, it grabbed our Best Buy thanks to its moderate $2413 price tag. IBM's speedy PIII-M-1133/733 ThinkPad T23 system smoked the competition with a PC WorldBench 2000 score of 212, the highest we've ever recorded for a laptop; however, its burdensome $3367 price tag held it to third place.

PHOTOGRAPH: RICK RIZNER

Visit find.pcworld.com/15480 for reviews of all products ranked in this chart or tested this month.

BASE CONFIGURATION										
CPU	Screen (inches)	RAM (MB)	Hard drive (GB)	Pointing device	Multi-purpose bays	Extra features	Overall design	Battery life (hours:min) [2]	Average weight (pounds) [3]	Vendor's reliability/ service
Pentium III-M-1000/733	15	256	20	Touchpad, eraserhead	1	**Good:** 8X DVD-ROM drive, built-in modem and network adapter, Microsoft Office XP Small Business CD	**Outstanding**	**Good/** 3:01	**Heavy/** 9.0	**Good/ Fair**
Pentium III-M-1000/700	14.1	256	30	Eraserhead	1	**Good:** 6X DVD-ROM and 4X/4X/24X CD-RW combination drive, built-in modem and network adapter, Office XP Small Business	**Very good**	**Good/** 3:02	**Average/** 7.3	**Good/ Fair**
Pentium III-M-1133/733	14.1	256	48	Eraserhead	1	**Good:** 8X DVD-ROM drive, built-in modem and network adapter, Lotus SmartSuite Millennium Edition CD	**Outstanding**	**Average/** 2:41	**Light/** 6.5	**Good/ Fair**
Athlon 4-1000	15	256	20	Touchpad	0	**Good:** 8X DVD-ROM and 4X/4X/24X CD-RW combination drive, built-in modem and network adapter, Microsoft Works 2001	**Average**	**Good/** 3:11	**Heavy/** 8.5	**Good/ Fair**
Pentium III-M-1133/733	15.1	128	30	Touchpad	1	**Average:** 8X DVD-ROM drive, built-in modem and network adapter	**Average**	**Good/** 3:48	**Heavy/** 8.3	**[4]/Good [5]**
5 percent						10 percent	10 percent	5 percent	10 percent	25 percent
Pentium III-750/600	14.1	128	10	Touchpad, eraserhead	1	**Good:** 10X-24X CD-ROM drive, PC Card modem, network adapter, 802.11b wireless antenna	**Outstanding**	**Good/** 3:45	**Average/** 7.8	**Good/ Fair**
Pentium III-1000/700	15	128	20	Touchpad	0	**Good:** 8X DVD-ROM drive, built-in modem and network adapter, Microsoft Works 2000	**Average**	**Good/** 3:36	**Heavy/** 8.4	**Fair/ Poor**
Pentium III-850/700	15	128	10	Touchpad, eraserhead	1	**Average:** 8X DVD-ROM drive, built-in modem	**Very good**	**Good/** 3:24	**Heavy/** 8.1	**[4]/Good [5]**
Pentium III-800/650	15	128	20	Touchpad	1	**Good:** 8X DVD-ROM drive, built-in modem and network adapter, Microsoft Office 2000 SBE	**Outstanding**	**Average/** 2:45	**Heavy/** 8.2	**Fair/ Good [5]**
Pentium III-1000	14.1	256	20	Touchpad	0	**Good:** 8X/6X/32X CD-RW drive, built-in modem and network adapter	**Average**	**Average/** 2:54	**Average/** 7.7	**[4]/Fair [5]**
Pentium III-1000	13.3	192	10	Touchpad	0	**Average:** 8X DVD-ROM drive, built-in modem and network adapter	**Average**	**Average/** 2:23	**Average/** 7.1	**[4]/Good [5]**
Pentium III-800/650	14.1	128	20	Touchpad	2	**Good:** 6X DVD-ROM drive, built-in modem	**Average**	**Average/** 2:27	**Heavy/** 8.3	**[4]/Fair [5]**
Pentium III-600/500	12.1	128	10	Eraserhead	2	**Good:** 12X-24X CD-ROM drive, built-in modem and network adapter	**Excellent**	**Good/** 3:09	**Average/** 7.5	**Good/Fair**
Pentium III-750/600	12.1	256	30	Touchpad	1	**Very good:** 8X DVD-ROM and 8X/4X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2000	**Average**	**Average/** 2:26	**Light/** 6.5	**Good/ Fair [5]**
Pentium III-750	12.1	320	20	Touchpad	2	**Good:** 8X DVD-ROM and 8X/4X/24X CD-RW combination drive, built-in modem and network adapter, Microsoft Works 2002	**Average**	**Poor/** 1:33	**Light/** 6.5	**Fair/ Fair**
5 percent						10 percent	10 percent	5 percent	10 percent	25 percent

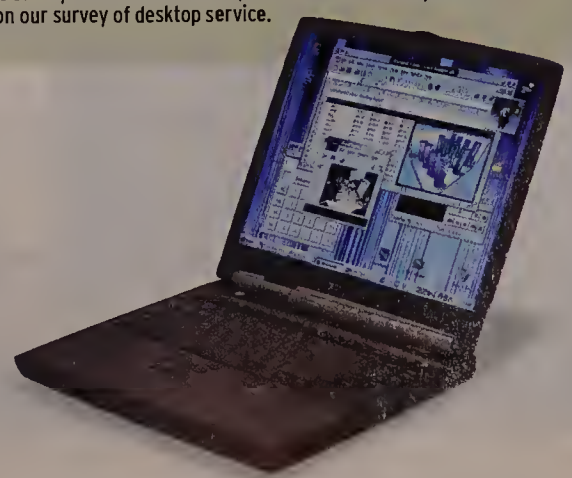
[2] Unless otherwise noted, all notebooks come with a lithium ion battery.
[3] Includes computer, AC adapter, power cord, floppy drive, and optical drive.
[4] Insufficient data to give a rating.
[5] Due to insufficient data from *PC World*'s survey of notebook service, score is based on responses to anonymous calls for tech support and on our survey of desktop service.

The value chart didn't have much turnover. We tested several new candidates this month, including the tenth-place Gateway Solo 3450, a 3-pound model with an included docking base.

We liked the tough aluminum-alloy skin, built-in DVD-ROM drive, and 3-hour battery life of WinBook's 5.2-pound (without the AC adapter) X1 laptop, but its $2298 price kept it off our chart. Gateway's new Solo 1200, a Celeron-800 unit priced at only $1199, was another intriguing candidate, but slow performance made it an also-ran.

We tested Fujitsu's new LifeBook C series as well, a notebook with four USB ports. The company discontinued the Pentium III-850 unit we reviewed, however; we'll look at another model soon.

—*Carla Thornton* ▶



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TOP 10 PRINTERS

Visit find.pcworld.com/14960 for reviews of all products ranked in this chart or tested this month.

DRAMATIC PRICE CHANGES shuffle our ranking of color laser printers. The most noticeable shifts involve the Oki Data Oki C7200n, which drops by $970 and becomes a Best Buy, and the Minolta-QMS Magicolor 6100 DeskLaser, which increases by $304 and falls two places to the sixth spot. This month we add the expensive Minolta-QMS Magicolor 6110 to our chart. Geared to deliver high-quality color for graphics professionals, this printer includes 256MB of RAM and the ability to handle 13-by-19-inch documents. As you'd expect, a slew of expensive options accompany this $4499 unit. ▶

	COLOR LASER PRINTER	Street price (9/28/01)	Overall rating	Speed for plain text/full-page graphics (ppm)	Print quality for text/ graphics	Comments
1	Best BUY Oki Data Oki C7200n find.pcworld.com/14942	$2252	87	11.9/2.3	Excellent/ Good	**FEATURES:** Rated 20 ppm monochrome/12 ppm color. Standard 64MB of RAM, 1200-by-600-dpi maximum resolution, 530 pages input, 500 output. **SUMMARY:** Shedding $970 from its price, Oki Data's letter-size LED model ranks among the fastest printers on the chart for text and graphics. Text quality is impressive too, with thick, dark letters, though colors appear too bright. Oki Data offers many options with this unit.
2	Best BUY Lexmark C720N find.pcworld.com/14941	$2469	87	12.0/2.0	Excellent/ Excellent	**FEATURES:** Rated 24 ppm monochrome/6 ppm color. Standard 64MB of RAM, 2400-by-1200-dpi maximum resolution, 250 pages input and output. **SUMMARY:** Lexmark's speedy color laser creates beautiful images. Text appears sharp and fine, and color graphics show rich colors, shadings, and detail. The price is reasonable, but this model lacks the paper-handling features of other color lasers.
3	Minolta-QMS Magicolor 2200 GN find.pcworld.com/14940	$1890	85	9.8/1.3	Excellent/ Very good	**FEATURES:** Rated 20 ppm monochrome/5 ppm color. Standard 128MB of RAM, 1200-by-1200-dpi maximum resolution, 650 pages input, 500 output. **SUMMARY:** With help from a $110 price drop, the Magicolor 2200 GN stays high on the chart. Its fast text printing, great print quality, and extra features make this unit well suited for an office. Graphics appear especially smooth and rich for a color laser.
4	Lexmark Optra C710N find.pcworld.com/14944	$1789	84	9.5/1.6	Very good/ Excellent	**FEATURES:** Rated 16 ppm monochrome/3 ppm color. Standard 32MB of RAM, 1200-by-1200-dpi maximum resolution, 300 pages input, 250 output. **SUMMARY:** The Optra C710N offers outstanding color fidelity and reasonably fast text and graphics printing speeds. Price is $410 less this month. The unit has an easy-to-understand control panel, but toner cartridges are a bit tricky to install—a minor quibble.
5	Tektronix Phaser 750N by Xerox find.pcworld.com/14946	$1999	81	7.3/1.4	Good/ Very good	**FEATURES:** Rated 16 ppm monochrome/5 ppm color. Standard 64MB of RAM, 1200-by-600-dpi maximum resolution, 350 pages input, 500 output. **SUMMARY:** The Phaser 750N offers middle-of-the-road text and graphics speeds, but delivers pleasing color images. Added benefits include a user-friendly control panel and a comprehensive on-screen manual. The price falls by $296 this month.
6	Minolta-QMS Magicolor 6100 DeskLaser find.pcworld.com/14943	$2299	80	5.6/0.9	Very good/ Good	**FEATURES:** Rated 24 ppm monochrome/6 ppm color. Standard 32MB of RAM, 1200-by-600-dpi maximum resolution, 250 pages input and output. **SUMMARY:** This SOHO model from Minolta-QMS adds $304 to its price. It has sharp print quality, an intuitive design, and top-notch support. Performance is quite slow, however, because this unit lacks an internal processor, and its control panel menus are difficult to decipher.
7	Oki Data Oki C9200n find.pcworld.com/14947	$5182	79	12.8/2.5	Excellent/ Very good	**FEATURES:** Rated 26 ppm monochrome/21 ppm color. Standard 128MB of RAM, 1200-by-600-dpi maximum resolution, 650 pages input, 600 output. **SUMMARY:** LED-based unit drops by $287 but remains pricey. Both text and graphics print extremely quickly, on sheets up to 12 by 18 inches. Text looks sharp, and narrow lines appear distinct; color images, though detailed, look too orange.
8	Brother HL-2400CeN find.pcworld.com/14945	$1999	79	9.4/1.1	Very good/ Good	**FEATURES:** Rated 16 ppm monochrome/4 ppm color. Standard 32MB of RAM, 2400-by-600-dpi maximum resolution, 250 pages input and output. **SUMMARY:** The HL-2400CeN produces text pages fairly quickly and creates crisp letters and rich, detailed graphics, all for a low price. It churns out graphics rather slowly, however. The unit's biggest drawback is its confusing control panel.
9	Xerox Phaser 860N find.pcworld.com/14948	$2399	78	7.2/2.8	Very good/ Good	**FEATURES:** Rated 10 ppm monochrome/10 ppm color. Standard 64MB of RAM, 464-by-928-dpi maximum resolution, 200 pages input, 250 output. **SUMMARY:** Xerox's solid-ink printer uses heated wax instead of a laser and toner. Graphics print faster on this unit than on any other model on the chart and appear detailed, if somewhat filmy. Letters are dark, with a hint of jaggedness. The unit is $100 less this month.
10	Minolta-QMS Magicolor 6110 NEW find.pcworld.com/14980	$4499	76	9.5/0.9	Excellent/ Very good	**FEATURES:** Rated 24 ppm monochrome/12 ppm color. Standard 256MB of RAM, 1200-by-1200-dpi maximum resolution, 250 pages input and output. **SUMMARY:** Intended for graphics professionals, Minolta's high-priced 6110 can print 13-by-19-inch formats and creates fabulous text, color, and gray-scale images. Despite its sizable memory, this model lags in print speed behind many other color lasers. ★★★½☆

HOW WE TEST: The overall rating for color laser printers is based on print quality (25 percent), price (25 percent), features (15 percent), ease of use (15 percent), speed (10 percent), and service and support (10 percent). For all ratings, higher is better. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. See find.pcworld.com/10860 for details on *PC World's* Star Ratings. [1] All street prices include a network card.

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TOP 10 MONITORS

Visit find.pcworld.com/14840 for reviews of all products ranked in this chart or tested this month.

THE SAMSUNG SYNCMASTER 950p's attractive price and sterling image quality earn that display the top spot in this month's chart of 19-inch monitors. The KDS VS 195i placed second on the strength of its bargain price. Mediocre performance kept new models from ViewSonic (the G90f), Hitachi (the CM721F), and Samsung (the SyncMaster 900NF) at the bottom half of the chart. We also evaluated the AOC 9GLRS, the Envision EN-980e, and the Sony HMD-A400/L, but they failed to reach the Top 10; see our reviews of those models online. Next month we'll look at 17-inch monitors. ▶

	19-INCH MONITOR	Street price (9/17/01)	Overall rating	Quality of text/graphics	Comments
1	Best BUY Samsung SyncMaster 950p find.pcworld.com/10570	$269	92	Excellent/ Very good	**FEATURES:** 18-inch viewable area, .26mm[1] invar shadow mask tube, up to 89-Hz refresh rate,[2] up to 1920 by 1440 resolution at 70 Hz, TCO'99 compliant, three-year warranty, 24-hour daily toll-free support. **SUMMARY:** Superb image quality for a reasonable price, plus easy-to-use on-screen controls, including dials for adjusting brightness and contrast. Bulky; may not suit cramped spaces. (★★★★½ Sept 01)
2	Best BUY KDS VS 195i find.pcworld.com/10574	$239	88	Very good/ Good	**FEATURES:** 18.2-inch viewable area, .25mm[1] invar shadow mask tube, up to 85-Hz refresh rate,[2] up to 1600 by 1200 resolution at 70 Hz, TCO'99 compliant, three-year warranty, 11-hour weekday toll-free support. **SUMMARY:** An appealing price and sharp text make the KDS ideal for those on a budget, but this display's average graphics quality rules it out for professional use. (★★★★☆ Sept 01)
3	Optiquest Q95 find.pcworld.com/10800	$230	88	Very good/ Very good	**FEATURES:** 18-inch viewable area, .23mm[1] invar shadow mask tube, up to 80-Hz refresh rate,[2] up to 1600 by 1200 resolution at 70 Hz, three-year warranty, 24-hour daily toll-free support. **SUMMARY:** The cheapest monitor on the chart is a good choice for buyers looking to save money, but image quality was slightly worse than that of the more expensive SyncMaster 950p. (★★★½☆ Sept 01)
4	ViewSonic GS790 find.pcworld.com/10573	$315	87	Very good/ Very good	**FEATURES:** 18-inch viewable area, .26mm[1] invar shadow mask tube, up to 95-Hz refresh rate,[2] up to 1600 by 1200 resolution at 70 Hz, TCO'99 compliant, three-year warranty, 24-hour daily toll-free support. **SUMMARY:** Vibrant colors in images make this model suitable for graphics pros. Around-the-clock tech support is helpful for both business and small-office/home-office users. (★★★★☆ Sept 01)
5	CTX EX950F find.pcworld.com/14520	$299	80	Satisfactory/ Good	**FEATURES:** 18-inch viewable area, .25mm[1] invar shadow mask tube, up to 90-Hz refresh rate,[2] up to 1600 by 1200 resolution at 70 Hz, TCO'99 compliant, three-year warranty, 12-hour weekday toll-free support. **SUMMARY:** Text looked slightly fuzzy and difficult to read. Tech support hours are limited compared with 24-hour support offered by other manufacturers. (★★½☆☆ Sept 01)
6	Iiyama I91A find.pcworld.com/10806	$349	80	Good/ Satisfactory	**FEATURES:** 17.9-inch viewable area, .25mm[1] Diamondtron tube,[3] up to 98-Hz refresh rate,[2] up to 1600 by 1200 resolution at 70 Hz, TCO'99 compliant, three-year warranty, 12-hour weekday toll-free support. **SUMMARY:** The I91A has easy-to-use controls and is smaller than many other models on the chart. However, image quality is merely average while the price is somewhat above average. (★★★☆☆ Sept 01)
7	ViewSonic G90f NEW find.pcworld.com/14622	$299	79	Satisfactory/ Satisfactory	**FEATURES:** 17.9-inch viewable area, .25mm[1] Perfect Flat tube, up to 89-Hz refresh rate,[2] up to 1600 by 1200 resolution at 70 Hz, TCO'99 compliant, three-year warranty, 24-hour daily toll-free support. **SUMMARY:** This unit comes with a chart that makes setup easy, but other documentation is only on CD-ROM. While the price is reasonable, the image quality is merely average. ★★★½☆
8	Hitachi CM721F NEW find.pcworld.com/14841	$279	78	Satisfactory/ Good	**FEATURES:** 18-inch viewable area, .24mm[1] invar shadow mask tube, up to 85-Hz refresh rate,[2] up to 1600 by 1200 resolution at 70 Hz, TCO'99 compliant, five-year warranty, 11.5-hour weekday toll-free support. **SUMMARY:** Acceptable image quality. Poorly designed controls that have no text labels in the on-screen menu can be confusing, though they are explained in the manual. ★★★☆☆
9	Samsung SyncMaster 900NF NEW find.pcworld.com/14521	$409	78	Good/ Satisfactory	**FEATURES:** 18-inch viewable area, .25mm[1] Natural Flat aperture grille tube, up to 102-Hz refresh rate,[2] up to 1920 by 1440 resolution at 70 Hz, TCO'99 compliant, three-year warranty, 24-hour daily toll-free support. **SUMMARY:** Controls are hidden behind a neat drop-down panel on the front bezel. Adequate image quality for both text and graphics, but expensive. ★★★½☆
10	Sony CPD-G420S find.pcworld.com/10577	$530	77	Very good/ Very good	**FEATURES:** 17.9-inch viewable area, .24–.25mm[1] FD Trinitron tube, up to 85-Hz refresh rate,[2] up to 1600 by 1200 resolution at 70 Hz, TCO'99 compliant, three-year warranty, 24-hour daily toll-free support. **SUMMARY:** The CPD-G420S is well suited for heavy word processing or professional graphics work, but other monitors on our chart perform better and cost less. (★★★★☆ Sept 01)

HOW WE TEST: Twelve judges rate a monitor's text and graphics quality. We evaluate each unit on how well it displays typical business letters, spreadsheets, Web pages, and scanned photos. The overall rating is based on text and graphics quality (25 percent each), price (25 percent), features and ease of use (20 percent), and service and support (5 percent). The best possible overall rating is 100. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. See find.pcworld.com/10860 for details on *PC World*'s Star Ratings.
[1] Specification represents diagonal dot pitch for shadow mask monitors and stripe or varying stripe pitch for FD Trinitron and Diamondtron NF monitors. [2] Maximum refresh rate at 1280 by 1024 resolution (the tested resolution for this size monitor). [3] Uses an aperture grille in which parallel wires near the sides of the screen are strung farther apart than those at the middle.

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TOP 10 GRAPHICS BOARDS

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TWO NEW BARGAIN-PRICED CARDS debut on the *Top 10 Graphics Boards* chart this month, both from MSI and both based on the NVidia GeForce2 MX-400 chip. The $89 MSI MX400 Pro-VT32S, at number six, produces fine images and has S-Video connectors. The $79 MSI MX400 Pro2-32S, which enters the chart at number nine, is for minimalists who want nothing more than a basic graphics card. Neither card is at the cutting edge of performance, but both are suitable for casual gaming or general use. Meanwhile, MSI has cut the price of the number two G3 Pro-VT64D by $49. ▶

	AGP BOARD	Street price (9/18/01)	Overall rating	Image quality	Overall speed	Features rating	Comments
1	Best BUY CardExpert GeForce2 MX TwinView/Vivo Golden Sample find.pcworld.com/11423	$139	96	Very good	Good	Very good	**FEATURES:** NVidia GeForce2 MX-400 chip, 32MB of SDRAM, 350-MHz RAMDAC; S-Video-in and -out, composite-in and -out. **SUMMARY:** Solid performance and strong image quality, plus the ability to display to two different analog monitors or to a monitor and a TV simultaneously. (★★★★☆ Oct 01)
2	Best BUY MSI G3 Pro-VT64D [1] find.pcworld.com/13120	$310	93	Excellent	Very good	Very good	**FEATURES:** NVidia GeForce3 chip, 64MB of DDR SDRAM, 350-MHz RAMDAC; S-Video-out, composite-in and -out; overclocking and desktop utilities, digital video tools, and software DVD player. **SUMMARY:** Excellent image quality plus an extensive software bundle and a $49 price cut. (★★★★½ Nov 01)
3	CardExpert GeForce3 Power Pack find.pcworld.com/11301	$349	92	Very good	Excellent	Very good	**FEATURES:** NVidia GeForce3 chip, 64MB of DDR SDRAM, 350-MHz RAMDAC; S-Video-in and -out, composite-in and -out; video-editing software. **SUMMARY:** Outperformed other GeForce3 cards in overall speed, but lagged slightly behind the others in image quality. (★★★★☆ Oct 01)
4	Asus AGP-V7100 Pro Pure 32MB find.pcworld.com/13101	$89	91	Very good	Good	Good	**FEATURES:** NVidia GeForce2 MX-400 chip, 32MB of SDRAM, 350-MHz RAMDAC; color-calibration utility, software DVD player, and three PC games. **SUMMARY:** A generous game bundle, fine performance, and a low price make this model a great choice for casual gamers on a budget. (★★★★☆ Nov 01)
5	ATI All-in-Wonder Radeon find.pcworld.com/10140	$249	90	Good	Good	Excellent	**FEATURES:** ATI Radeon chip, 32MB of DDR SDRAM, 350-MHz RAMDAC; DVI-out, TV tuner, hardware DVD support; graphics-editing software. **SUMMARY:** This card makes a strong showing thanks to its video features and bundled software. It's a great card for video-editing mavens.
6	MSI MX400 Pro-VT32S NEW find.pcworld.com/14540	$89	90	Very good	Good	Good	**FEATURES:** NVidia GeForce2 MX-400 chip, 32MB of SDRAM, 350-MHz RAMDAC; S-Video-in and -out, composite-out; software DVD player, overclocking utilities. **SUMMARY:** Excellent value for casual gamers, but no bundled games. Produced occasional glitches in some of our test games. ★★★☆☆
7	Asus AGP-V8200 Deluxe find.pcworld.com/13100	$349	90	Very good	Very good	Very good	**FEATURES:** NVidia GeForce3 chip, 64MB of DDR SDRAM, 350-MHz RAMDAC; S-Video-in and -out, composite-out, VR port, VR glasses; color-calibration utility, software DVD player, and three PC games. **SUMMARY:** Fine bundle and performance on a par with that of other GeForce3 cards. (★★★★☆ Nov 01)
8	ELSA Gladiac 920 find.pcworld.com/10280	$399	89	Excellent	Very good	Good	**FEATURES:** NVidia GeForce3 chip, 64MB of DDR SDRAM, 350-MHz RAMDAC; software DVD player, game. **SUMMARY:** Magnificent images earned the ELSA near-perfect image-quality scores. DirectX 8 hardware support will be a plus when DirectX 8 games become more common. (★★★★★ Sept 01)
9	MSI MX400 Pro2-32S NEW find.pcworld.com/14560	$79	86	Very good	Good	Good	**FEATURES:** NVidia GeForce2 MX-400 chip, 32MB of SDRAM, 350-MHz RAMDAC; software DVD player, overclocking utilities. **SUMMARY:** The same basic hardware as the MSI MX400 Pro-VT32S, but without the software bundle and the S-Video-in, S-Video-out, and composite-out ports. ★★★☆☆
10	Hercules 3D Prophet III find.pcworld.com/11320	$429	85	Very good	Very good	Very good	**FEATURES:** NVidia GeForce3 chip, 64MB of DDR SDRAM, 350-MHz RAMDAC; DVI-out, S-Video-out, composite-out; software DVD player. **SUMMARY:** Excellent frame rates, but some problems marred this board's performance on two of our test games. The most expensive card on the chart. (★★★☆☆ Sept 01)

HOW WE TEST: We test graphics boards under Windows Millennium Edition. Our performance scores are based on tests that we evaluate on frame rate (50 percent) and image quality (50 percent). We use GT Interactive's Unreal Tournament, Id Software's Quake III Arena, Interplay's MDK2 Demo, Infogrames' Test Drive 6, and the Caligari TrueSpace 4.2 8enchmark for both performance and image-quality testing. We test graphics boards in a Dell Dimension 4100 Series with a PIII-933 CPU and 128MB of PC133 SDRAM. To test each board, we use drivers supplied by the vendor. Overall rating is based on performance (42.5 percent), features (27.5 percent), price (20 percent), and support policies (10 percent). All boards are AGP compatible unless otherwise noted. See find.pcworld.com/10860 for details on *PC World*'s Star Ratings. [1] Renamed by vendor; initially called StarForce 822.

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TOP 10 CD-RW DRIVES

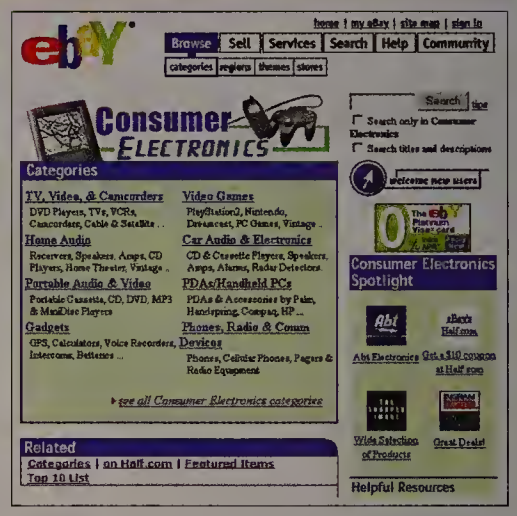
Visit find.pcworld.com/15740 for reviews of all products ranked in this chart or tested this month.

PRICE BREAKS ARE SEEMINGLY the norm when it comes to CD-RW drives. But this month we see an extraordinary reduction that slices $95 from the selling price of TDK's 24/10/40 VeloCD ReWriter. Formerly ranked second on the chart, the drive jumps to the number one spot on the strength of its new $150 price, simultaneously pushing the Yamaha LightSpeed CRW2200EZ down one notch. Meanwhile, three new drives debut on the chart—including units from CenDyne and QPS that write to CD-R discs at 24X, and a 16X/10X/40X model from LG Electronics. ▶

	CD-RW DRIVE	Street price (9/17/01)	Overall rating	Performance/ support policies	CD-R write speed for 650MB/ CD-RW write speed for 100MB (min:sec)	Comments
1	Best BUY TDK 24/10/40 VeloCD ReWriter find.pcworld.com/11142	$150	92	Excellent/ Very good	4:12/1:20	**FEATURES:** 24X/10X/40X,[1] IDE, internal, 2MB buffer, buffer underrun technology, Ahead Nero Burning ROM 5.5 and InCD 2.12, one-year warranty, 10.5-hour daily toll-free support. **SUMMARY:** One of the fastest drives we've tested, this model drops a whopping $95 from its previous price—making it cheaper than many 16X models. (★★★★☆ Oct 01)
2	Best BUY Yamaha LightSpeed CRW2200EZ find.pcworld.com/11146	$220	91	Excellent/ Very good	4:49/1:16	**FEATURES:** 20X/10X/40X,[1] IDE, internal, 8MB buffer, buffer underrun technology, Ahead Nero Burning ROM 5.5 and InCD 2.11, one-year warranty, 12-hour weekday toll-free support. **SUMMARY:** This speedy drive blazed through our CD-RW tests (where it logged the fastest time). It also has a terrific software bundle. (★★★★½ Oct 01)
3	CenDyne Lightning 24x10x40 NEW find.pcworld.com/14020	$180	91	Excellent/ Satisfactory	4:11/1:19	**FEATURES:** 24X/10X/40X,[1] IDE, internal, 2MB buffer, buffer underrun technology, Ahead Nero Burning ROM 5.5 and InCD 2.26, one-year warranty, 9-hour weekday and 4-hour Saturday support. **SUMMARY:** Excellent performance and a competitive price make this 24X drive a great choice; however, technical support calls are not toll-free. ★★★★☆
4	QPS Que Internal 24x10x40x CD-RW NEW find.pcworld.com/14040	$190	90	Excellent/ Good	4:12/1:20	**FEATURES:** 24X/10X/40X,[1] IDE, internal, 2MB buffer, buffer underrun technology, Ahead Nero Burning ROM 5.5 and InCD 2.23, one-year warranty, 11.5-hour weekday toll support. **SUMMARY:** First-rate CD-R and CD-RW write performance and a reasonable price help propel this no-frills drive onto our chart. ★★★☆☆
5	LG Electronics GCE-8160B NEW find.pcworld.com/14000	$140	90	Very good/ Very good	5:32/1:31	**FEATURES:** 16X/10X/40X,[1] IDE, internal, 2MB buffer, buffer underrun technology, Adaptec Easy CD Creator 4.03 and DirectCD 3.03, one-year warranty, 12-hour weekday toll-free support. **SUMMARY:** LG's entry into the 16X CD-R writer market is a strong performer and a fast CD-ROM reader for its speed class. ★★★½☆
6	TDK 16/10/40 VeloCD ReWriter find.pcworld.com/11141	$155	90	Very good/ Very good	5:31/1:37	**FEATURES:** 16X/10X/40X,[1] IDE, internal, 2MB buffer, buffer underrun technology, Ahead Nero Burning ROM 5.0 and InCD 1.75, one-year warranty, 11.5-hour weekday and 10-hour Saturday toll-free support. **SUMMARY:** This drive comes with a handy installation video and useful music software. (★★★★☆ Oct 01)
7	Sony CRX1611/82U find.pcworld.com/11136	$150	90	Very good/ Very good	5:36/1:21	**FEATURES:** 16X/10X/40X,[1] IDE, internal, 2MB buffer, buffer underrun technology, BHA's B's Recorder Gold 1.99 and Clip, one-year warranty, 12-hour weekday and 12-hour Saturday toll-free support. **SUMMARY:** Ranks as a good overall performer—in spite of its sluggish times for installing Office and writing an image to CD-R. (★★★☆☆ Oct 01)
8	Plextor PlexWriter 16/10/40A find.pcworld.com/11130	$185	88	Very good/ Good	5:38/1:49	**FEATURES:** 16X/10X/40X,[1] IDE, internal, 2MB buffer, buffer underrun technology, Adaptec Easy CD Creator 4.03 and DirectCD 3.03, one-year warranty, 10-hour weekday toll-free support. **SUMMARY:** The inclusion of drivers for drag-and-drop extraction of CD audio tracks makes this an excellent pick for audio enthusiasts. (★★★★☆ Oct 01)
9	Iomega 16x10x40 Internal CD-RW find.pcworld.com/11128	$200	88	Very good/ Very good	5:37/1:45	**FEATURES:** 16X/10X/40X,[1] IDE, internal, 2MB buffer, buffer underrun technology, Adaptec Easy CD Creator 4.03 and DirectCD 3.03, one-year warranty, 12-hour weekday and 7-hour Saturday toll-free support. **SUMMARY:** A solid general-use model, this drive features easy installation and good digital audio extraction times. (★★★½☆ Oct 01)
10	Teac CD-W516E 16x10x40 CD-RW find.pcworld.com/11143	$130	88	Very good/ Satisfactory	6:12/1:33	**FEATURES:** 16X/10X/40X,[1] IDE, internal, 2MB buffer, buffer underrun technology, Roxio Easy CD Creator 5.0 and DirectCD 5.0, one-year warranty, 9-hour weekday toll support. **SUMMARY:** This drive stays on the chart thanks to its low price, up-to-date software, and excellent CD-RW write performance. (★★★☆☆ Oct 01)

HOW WE TEST: To gauge CD-ROM read performance, we time how long the drive takes to install Microsoft Office 2000 SBE (disc one). To determine CD-R write performance, we burn data to CD-R discs from an image file and on the fly. We evaluate digital audio extraction speed by extracting 320MB of musical tracks from an audio CD to our hard drive. We measure CD-RW performance by copying 100MB of files to a CD-RW disc, then rewriting the same data to the same disc. Overall ratings are based on performance (35 percent), price (25 percent), features (20 percent), tech support policies (10 percent), and ease of installation (10 percent). See find.pcworld.com/10860 for details on *PC World's* Star Ratings. [1] Vendor's speed ratings, listed in order: CD-R write/CD-RW write/CD-ROM read.

BUYERS' BEST FRIEND:
VALUE AND SELECTION



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Whether you're buying computers and electronics for personal needs, a home office, or a small business, value and selection most likely drive your purchasing decision. Savvy buyers want the very most for their money, not to mention an easy and productive buying experience and the broadest array of products from which to choose.

For these and other reasons, it's no surprise that buyers and sellers—34 million and counting—flock to eBay, the world's largest online marketplace, for computers and electronic products.

GREAT DEALS AND A HUGE SELECTION OF NEW AND USED PRODUCTS

Buyers can quickly browse through more than 400,000 computer and electronic items for sale daily and find significant savings compared with shopping elsewhere—online or offline. What's more, about 60% of computer and electronic items listed for sale on eBay are new—still in the box, with manufacturers' warranties. That's because in addition to thousands of individuals and small merchants selling products, many well-known manufacturers such as IBM, Dell, Compaq, Palm, D-Link, Iomega, and Sun, along with merchants like Ritz Camera, now sell products through eBay.

HARD-TO-FIND ITEMS

At times, eBay has even been selected as the marketplace through which new products are introduced. Palm, for example, recently donated 50 of its latest M125 handheld computers to eBay's Auction for America (see related story). "On eBay, you can often find the hottest must-have products—even during the holiday shopping season when it is difficult to find them at the store," says Jordan Glazier, director of business development at eBay.

CONVENIENCE AND SAFETY

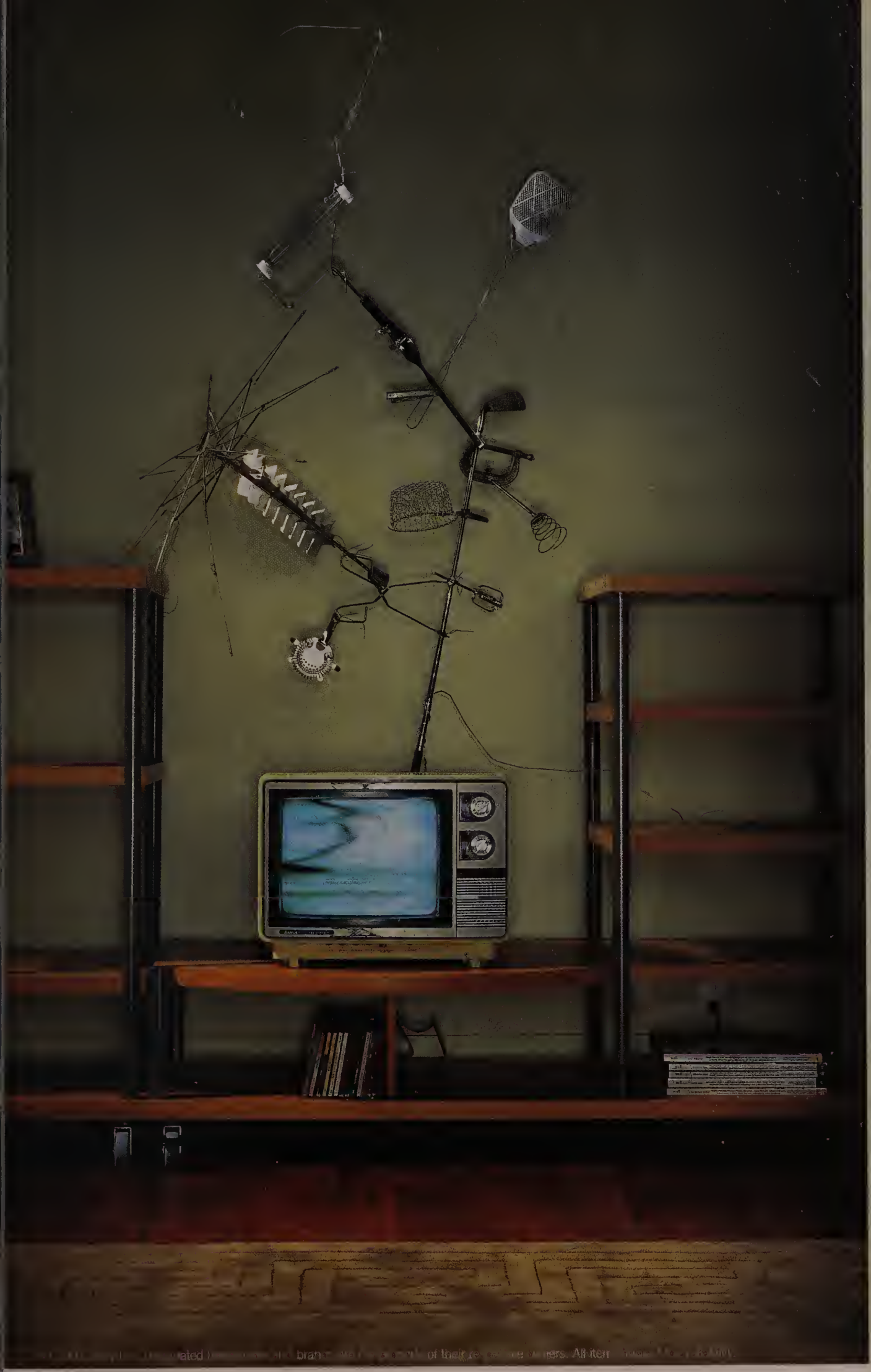
While each seller determines payment terms, more than three quarters of computer and electronics sales are settled with credit cards through online payment services, including eBay's "BillPoint" service.

And although many computer and electronics products on eBay are sold via an auction format, approximately 50% are available for immediate purchase at a fixed price through eBay's "Buy It Now" feature.

Another compelling feature of eBay is the feedback rating system. Alongside each seller's user ID, buyers can see the seller's feedback rating and can click to see all positive, neutral, and negative comments provided from previous buyers. This feedback loop offers quality assurances not found elsewhere. "For the first time in history, sellers wear their reputation right on their sleeves," Glazier says.

THE AUCTION FOR AMERICA

Be a part of eBay's Auction for America and help raise $100 million for the victims of the September 11th terrorist attacks. Backed by New York Governor George Pataki and NYC Mayor Rudolph Giuliani, eBay created Auction for America to help victims, their families, and affected communities. One hundred percent of all transactions will be contributed directly to the charity selected by the seller. To guarantee charity payments, all transactions will be processed through BillPoint, eBay's online credit card payment service



Televisions

DVD players and VCRs

Compact stereo systems

Surround sound systems

Everybody needs something and the odds are you'll find great deals at eBay. With millions of brand name products listed every week, we have a huge selection of new and used consumer electronics. From home entertainment and car audio to video games and wireless phones, we've got just about everything you could want or need. So if you are searching for a bargain, check us out first. Go to ebay.com or AOL keyword: ebay and register where you see this: welcome new users

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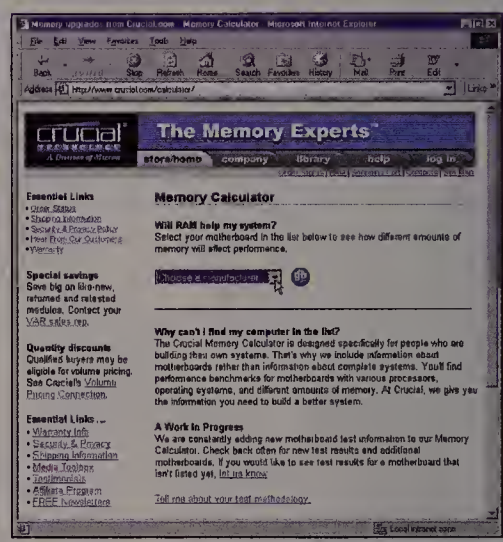

Have your favorite business applications been bringing your desktop PC to its knees? Is your notebook buckling beneath the burden of DVD movies and other multimedia tools? PC enthusiasts often go to great lengths to bring their systems up to speed, from overclocking their CPUs to building new systems to their own specifications. But did you know that adding RAM is often the quickest, cheapest and most reliable way to boost your system's performance?

crucial TECHNOLOGY
A Division of Micron®

RAM upgrades can dramatically improve system performance, according to studies by nonprofit groups such as the Council on Computing Power. One study found that additional RAM could accelerate PCs running Windows 98 by as much as 42%. And many experts say systems running Microsoft Windows 2000 and Windows XP can take even better advantage of memory upgrades.

That's one of the reasons Crucial.com, a Web-based DRAM seller, is making upgrades easier for users that want to get the most out of their new (and existing) systems. "Buying the right memory for your system's motherboard should be a non-event," says Mike Sanor, technical support manager at Crucial. "That's why we're giving shoppers the tools they need to make clear decisions and to avoid compatibility problems."

Crucial has designed an online Memory Calculator to simplify memory upgrades, by helping users find just the right amount of RAM to maximize their systems' performance. "The Memory Calculator helps users find that sweet spot," says Sanor, "with performance benchmarks for motherboards with a variety of processors, operating systems and different amounts of memory."

Crucial assesses motherboard performance with Business Winstone and Content Creation Winstone from Ziff Davis. The tests measure the time a system takes to run applications through a series of scripted activities. Both Winstone tests focus on "hot spots," periods of processor- or disk-intensive activity, when user wait time is often the longest. Information from motherboard manufacturers and Crucial's own internal compatibility testing assures the accuracy of the Memory Calculator's data. The vendor continually adds new test results, and users can ask Crucial to add their favorite motherboards to the list.

"Buying the right memory for your system's motherboard should be a non-event."

—Mike Sanor, technical support manager, Crucial

As a division of DRAM maker Micron, Crucial can offer memory upgrades directly to consumers, at factory-direct prices. Micron, the largest memory manufacturer in the United States, tests all of its memory modules under extreme temperatures, voltages, and operating conditions. It also guarantees its modules to be compatible with systems matched through its Memory Selector tool.

Sanor says the Memory Calculator serves as a source of unbiased information about motherboards and memory, and demonstrates the difference additional RAM can make in most systems. "We've always made the assertion that adding RAM is the quickest, cheapest, easiest and often the most effective way to boost performance," he says, "Now we have the data to back it up."

Your only source for factory-direct DDR!

256MB PC2100 DDR
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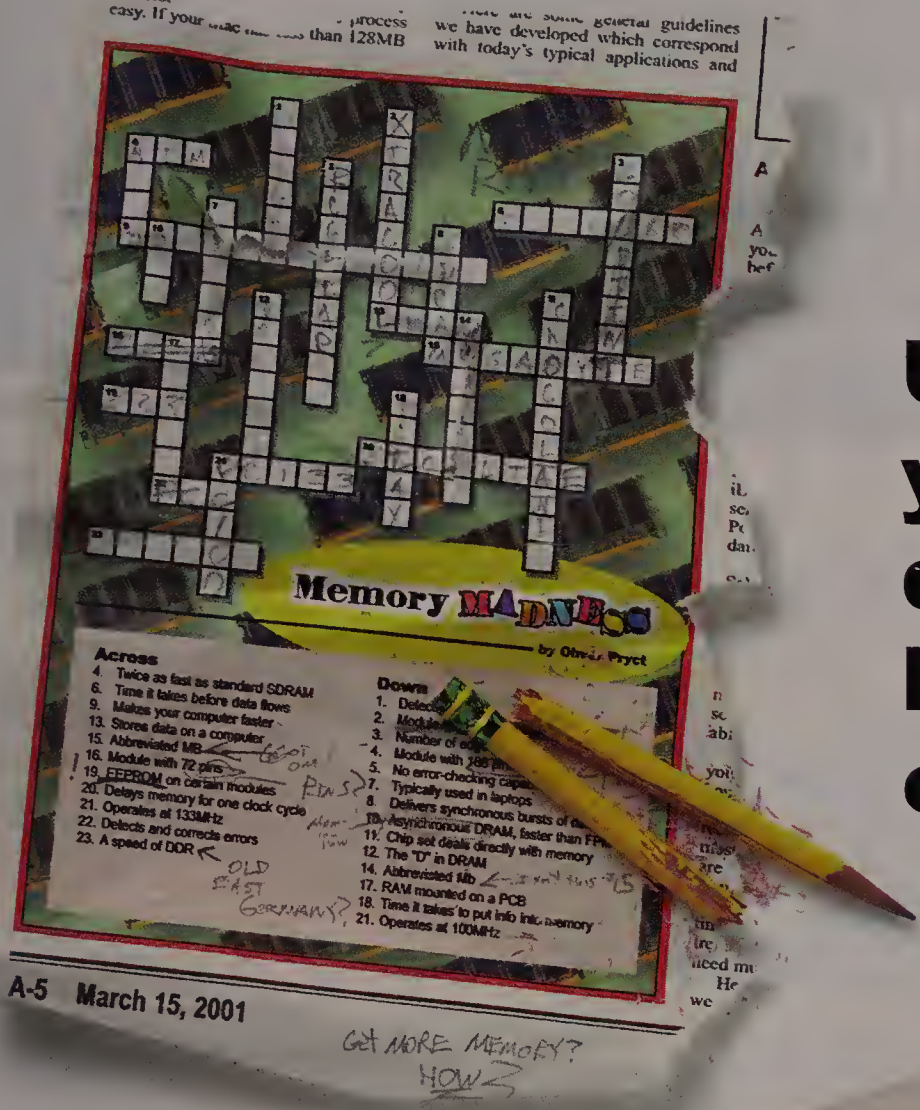
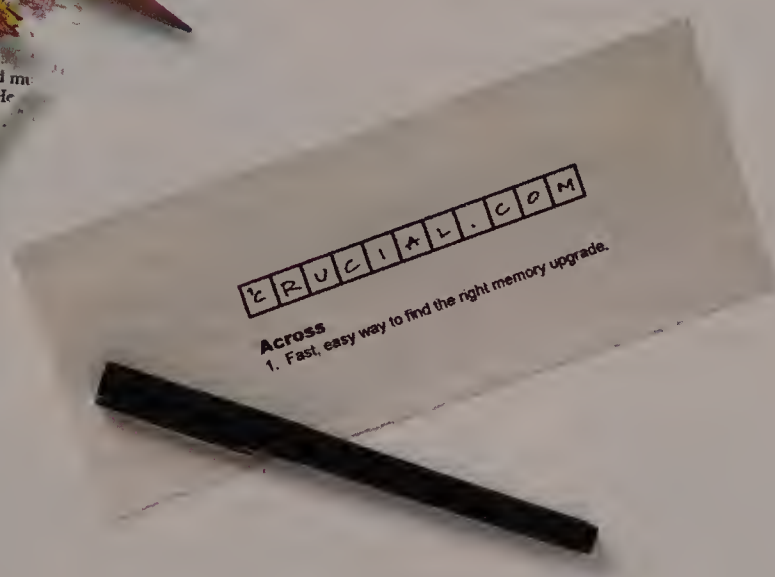


Upgrading your memory doesn't have to be complicated.



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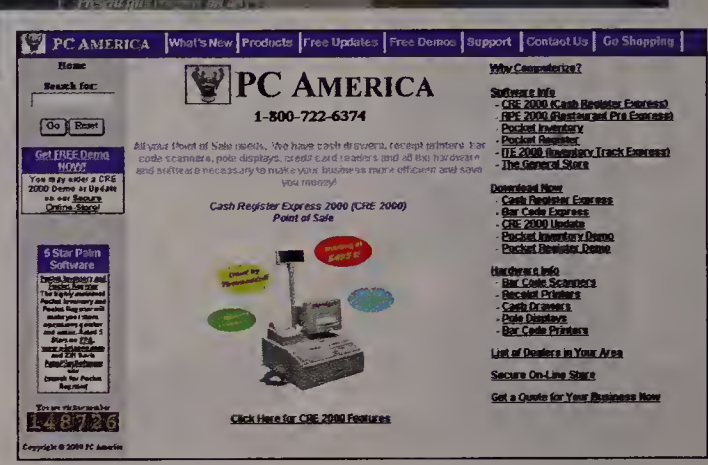


The home page for PC America speeds you to the point-of-sale products you need.

While many motorists in Dimondale, Mich. say the family-owned Windmill Truck Stop is a home away from home, its controller, Kevin Edelmann, says it's been more like a house of accounting horrors. Besides monitoring retail fuel sales in the truck stop's "truckers only" area, he also has to keep an eye on commuters' and travelers' purchases in the king-sized complex's convenience store, family restaurant, motel, and auto service center. "Keeping track of all of that inventory has been a nightmare," Edelmann says.

The Point of Sale (POS) system that the Windmill had been using since 1982 did a fine job of ringing up sales, but it couldn't tell store managers anything about what was on the shelf. "The system only broke sales down by department," Edelmann says. "So it couldn't tell the difference between a tube of toothpaste and a bottle of shampoo."

Edelmann found only a few POS solutions that were easy to use, Microsoft Windows-based, and able to support multiple input devices. And none of them could manage the 20,000-plus items in the Windmill's convenience store and restaurant. "We desperately needed a solution that could bring all of these components of our business together," he says.

PC AMERICA

Things finally turned around at the Windmill once Edelmann deployed PC America's Cash Register Express (CRE 2000), a Windows-based POS program that works with ordinary PCs and peripherals, as well as barcode scanners, receipt printers, and pole displays (which show charges at the checkout counter). Now all of the Windmill's cashiers can use touch screens and barcode scanners to enter orders and update inventory. And setting up CRE 2000 could not be easier, says Edelmann. "PC America did an excellent job pulling all of the hardware together initially. But the great thing about their software is that I can grab any component I want off the shelf and throw it together in no time. This is one slick program."

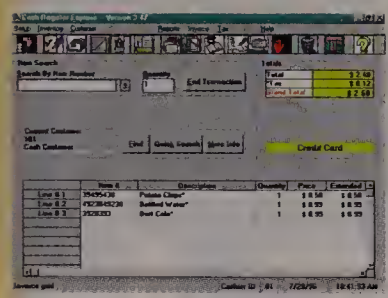
The Windmill has processed more than half a million transactions with CRE 2000 and PC America's Restaurant Pro Express (RPE 2000) since October 1999. And Edelmann predicts that PC America will continue to develop the software he needs to keep things running smoothly. "PC America is constantly improving upon their products," he says.

Now PC America is helping retailers like the Windmill to move beyond the sale itself to increase revenues. A new feature in CRE 2000 gives businesses the ability to print coupons on the bottom of sales receipts on an Epson TM-T88II receipt printer. They can use the coupons to advertise specials on slow business days (e.g., "10 Percent Off All Purchases Every Tuesday"), or to give their customers discounts on overstock items (e.g., "Get a Free Six-Pack of Pepsi on Your Next Visit").

CRE 2000's couponing feature promises retailers an excellent route to a crucial dimension in retail sales. "Repeat business is the most important aspect of any business," says PC America's president, Howard Gosman. "With this addition to our POS package, we are giving our customers a quick and easy-to-use method for creating it."

Cash Register Express Software for Windows...$495

Computerize any type of retail store using Cash Register Express for Windows. Computerization pays for itself, saving you thousands of dollars, giving you peace of mind, and making the best use of your time. Cash Register Express



has more than 250 of the most desired point of sale features to help you leapfrog past your competition by controlling costs, reducing errors and increasing efficiency.

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All PC America Software requires Microsoft Windows. The software was written in Visual Basic using Microsoft Access Files. The source code is available.

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HERE'S HOW

EDITED BY DENNIS O'REILLY

WINDOWS TIPS

SCOTT DUNN

Right-Click for Faster Windows Navigation

ALL Versions

WHY CLICK through three menus, two windows, and a couple of dialog boxes just to get to a file, folder, or application? Left-brainers can remember shortcut keys; but everyone else, think right! Your right mouse button's shortcuts take you where you're going fast. So limber up those fingers and get ready to right-click.

Manage multiple windows simultaneously: If you want to close, tile, minimize, maximize, or otherwise arrange several application windows, don't fuss with each individually. Hold down **<Ctrl>** as you click the taskbar buttons of the windows you want to arrange or close. Then right-click one of the depressed buttons and choose the action you want from the menu.

Speed up disk maintenance: You can launch Backup (if it's installed), ScanDisk, Disk Cleanup, or Disk Defragmenter by choosing Start•Programs•Accessories•System Tools, but if Windows Explorer is open, it's faster simply to right-click the drive you want to work on and choose *Properties*. In the General tab, click *Disk Cleanup* to launch that tool for the disk you right-clicked (in Windows 98, 2000, and Me), or select the *Tools* tab to open one of Windows' other system utilities.

Click twice for Computer Management: Windows 2000 and XP provide fast access to the Computer Management utility. To get there, right-click *My Computer* and choose *Manage* (see **FIGURE 1**).

Reset your clock: Don't open the Control Panel to set the date, time, or time zone. Instead, right-click the clock in the taskbar and choose *Adjust Date/Time*. Better yet, double-click the clock.

Adjust your display the easy way: Control Panel isn't the fastest route to your display properties, either. Just right-click your desktop and choose *Properties*. Right-click the taskbar and choose *Minimize All Windows* to expose the desktop, and right-click the taskbar and select *Undo Minimize All* to restore your windows.

Get to System Properties without Control Panel: To access System Properties, right-click *My Computer* and choose *Properties*. If the My Computer window is already open, right-click the system menu icon in the upper-left corner of the window (near the File menu) to see the same menu, minus the Rename option.

A faster trip to Network Neighborhood: The quickest way to reach your network settings is to right-click the *Network Neighborhood* icon on the desktop (*My Network Places* in Windows Me) and choose *Properties*. As with My Computer, if the Network Neighborhood window is already open, right-click the system menu icon in the upper-left corner of the window (near the File menu) to see the same menu, again without the Rename option.

ILLUSTRATION: JAMES YANG

INSIDE

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200 STEP-BY-STEP
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Monitor your PC's memory to ensure peak performance; decipher DVD region codes; remove PC Cards safely.

206 ANSWER LINE
Retrieve data from bad CD-R and CD-RW discs; use a network printer to print a list of files in a folder.

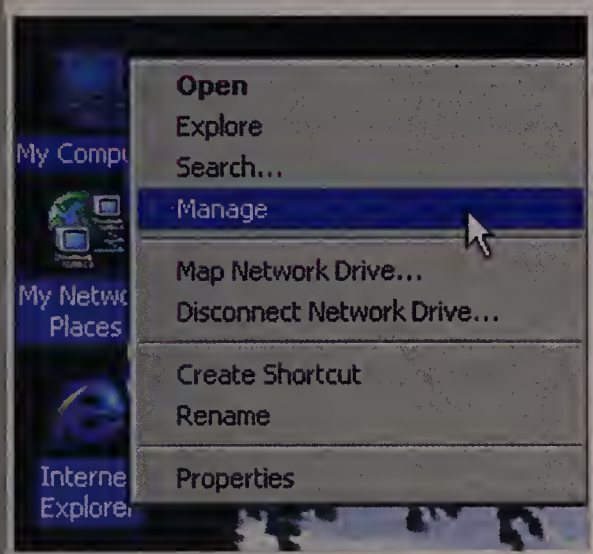


FIGURE 1: RIGHT-CLICK MY COMPUTER for fast access to network, system, and other settings.

Map or disconnect network drives: To map a network drive to your computer—or to disconnect a drive that's already there—right-click either *Network Neighborhood* (*My Network Places* in Windows Me) or *My Computer* and choose *Map Network Drive* or *Disconnect Network Drive*.

THE SENSIBLE SORT

ALL Versions

IF YOU PREFER the Details view in your folder windows, you probably know that this view lets you sort the items in a folder by clicking one of the column heads (Name, Type, Size, or Modified). Unfortunately, clicking the Type head only sorts the files by the description given to the file by Microsoft or by the application that created it, such as 'GIF Image' or 'DAT File'. Some of the descriptions take up way too much space with advertising (for example, every Office file type begins with *Microsoft*). And the file types may not be grouped in a logical manner.

One solution is to manage files using PowerDesk 4, a free Windows Explorer replacement available from Ontrack Data International. To Windows' file-sorting options, PowerDesk adds the ability to sort files by their description or by their three-letter extension. You can download PowerDesk at find.pcworld.com/13900 or from Ontrack itself (www.ontrack.com/powerdesk). For more information on PowerDesk 4, see "Darn Good Software, Doggone Cheap," page 149.

For even more file-sorting options, edit the descriptions of the file types you use most often. For example, if you work with Web graphics, you can change the descriptions for .bmp, .gif, and .jpg files from 'Bitmap Image', 'GIF Image', and 'JPEG Image' to **Images-BMP**, **Images-GIF**, and **Images-JPEG** to group all your image files together when you sort by type.

To change your file-type descriptions, choose *View•Options*, *View•Folder Options*, or *Tools•Folder Options* (depending on your version of Windows) in any folder. Click the *File Types* tab and scroll through the list of file types to find the one whose description you want to edit. Select it and click *Edit* or *Advanced*, depending on your version of Windows. In the Edit File Type dialog box, enter your new description, click *OK*, and close the remaining dialog boxes. Repeat these steps for all file types whose descriptions you want to alter.

REMAP YOUR KEYBOARD

I'M A BIG FAN of IBM ThinkPads, but my one complaint about them is their lack of a <Windows> key. Is there a way to map the <Windows> key onto another key on the ThinkPad's keyboard?

Kulvir S. Bhogal, Fort Worth, Texas

IN WINDOWS 2000 and NT 4, you can change the function of various keys to suit your needs. One of the many possible uses of this hidden feature is to add the convenient <Windows> key to an IBM ThinkPad. For more on <Windows> key shortcuts, see "The Windows Key: A Fast Worker" (find.pcworld.com/13901). Remapping your keyboard requires that you be willing to brave that esoteric compendium of Windows hardware and software settings, the Windows Registry. And ThinkPad users must also be willing to give up the use of an existing key that will function as their new <Windows> key.

First, a word of warning: Making careless changes to the Registry can cause serious problems, up to and including the inability to start Windows. If you decide to sacrifice one of your <Ctrl> or <Alt> keys to get a <Windows> key and if you typically use <Ctrl>-<Alt>-<Delete> to see

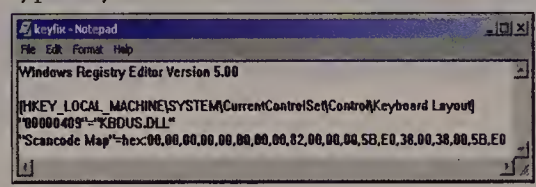


FIGURE 2: CHANGE YOUR keyboard's scan codes to give notebook keys new functions.

the Windows log-on screen (as in Windows 2000), a mistake in executing this tip could make it difficult for you to guess what keys to press to return to Windows.

Consequently, apply this tip with care, and be sure to back up your Registry before you begin. To back up in Windows NT, choose *Start•Run*, type **rdisk**, and press **<Enter>**. Click *Create Repair Disk* and follow the on-screen prompts; for more information, click *Help*. For assistance on backing up your Registry in Windows 2000 and XP, choose *Start•Help*, click the *Index* tab, and look for the topic 'Registry, Backing Up to Repair Directory' (in Windows 2000) or 'Back up System State data' (in Windows XP). In Windows XP, you can set a System Restore point; see ▶

the Windows XP Help system for details.

The easiest way to add the required codes to the Registry is to create a Registry script file in Notepad and merge this file into the Registry. For example, to use your left <Alt> key as your <Windows> key, log in to Windows as the administrator, start Notepad, and on the first line of a new file, type **REGEDIT4** (in Windows NT 4) or **Windows Registry Editor Version 5.00** (in Windows 2000 and XP). Press **<Enter>** twice, and type **[HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Keyboard Layout]**; press **<Enter>**. Type **"00000409"="KBDUS.DLL"** (including the two sets of double quotes) on the next line, and then press **<Enter>**. Now type **"Scancode Map"=hex:00,00,00,00,00,00,00,00,02,00,00,00,5B,E0,38,00,38,00,5B,E0** and press **<Enter>**. When you're done, the result should resemble the lines shown in **FIGURE 2**.

The last four pairs of hexadecimal numbers contain the codes for two individual keys: the left <Windows> key (5B,E0) and the left <Alt> key (38,00). The general form is "Scancode Map"=hex:00,00,00,00,00,00,00,00,02,00,00,00,<*Source key*>,<*Destination key*>,<*Source key*>,<*Destination key*>. To swap two keys, the last four pairs follow the pattern 'Key A, Key B, Key B, Key A'—meaning, "Key A becomes Key B, and Key B becomes Key A."

To make more changes, enter, at the end of the number string on the same Scancode Map line, an additional four pairs of numbers using the <*Source key*>,<*Destination key*> pattern and separating the pairs with commas. See **FIGURE 3** for a list of common keyboard "scan codes" that you can substitute in this line.

Once you've set up the Notepad file to remap the desired keys, save the file with a name such as **"keyfix.reg"**, including the quotation marks so Notepad won't add its default .txt extension. Exit Notepad, find the .reg file you just saved, right-click its icon, and choose *Merge* (or double-click the icon). Click *Yes* to confirm and *OK* to acknowledge the change. Then restart your computer.

If you want to start over, or if you decide you don't like the new key arrangement, you can return to your default keyboard map. To do so, choose *Start•Run*, type **regedit**, and press **<Enter>**. In the tree pane on the left, navigate to the HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Keyboard Layout path. With the Keyboard Layout folder icon highlighted in the left pane, select 00000409 and *Scancode Map* in the right pane and press **<Delete>**. Click *Yes* to confirm the deletion; then exit the Registry Editor and restart your computer.

KEYBOARD SCAN CODES

KEY	Code
Left <Alt>	3B,00
Right <Alt>	3B,E0
Left <Ctrl>	1D,00
Right <Ctrl>	1D,E0
Left <Shift>	2A,00
Right <Shift>	46,00
<Caps Lock>	3A,00
Left <Windows>	5B,E0
Right <Windows>	5C,E0
<F1>	3B,00
<F2>	3C,00
<F3>	3D,00
<F4>	3E,00
<F5>	3F,00
<F6>	40,00
<F7>	41,00
<FB>	42,00
<F9>	43,00
<F10>	44,00
<F11>	57,00
<F12>	5B,00

FIGURE 3: TO REMAP A KEYBOARD, add one of these scan codes to its Registry key.

SAFER REGISTRY HANDLING

BY DEFAULT, you add a .reg file's information to the Registry when you double-click the file. Windows 98 and later versions prompt you before doing so, but Windows 95 and NT 4 add the information with no prompting. That can be dangerous—especially for trigger-happy double-clickers. If you handle .reg files frequently, it's safer and more convenient to make double-clicking a .reg file open the file in Notepad (or perform some other operation) rather than add it to your Registry.

In any Windows Explorer or folder window, choose *View•Options*, *View•Folder Options*, or *Tools•Folder Options* (depending on your version of Windows). Click the *File Types* tab. Select *Registration Entries* from the list of file types, and click *Edit* or *Advanced*, depending on your version of Windows. In the Edit File Type dialog box, select *Edit* in the Actions list and click *Set Default*. Click *OK* or *Close* and close the remaining dialog boxes.

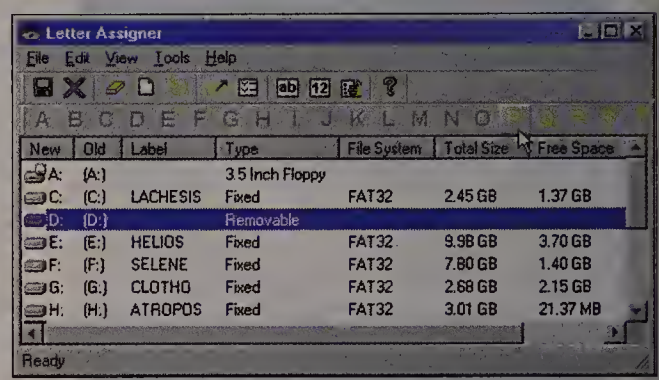
The next time you double-click a .reg file, it will open in Notepad instead of being added to the Registry. (If the file is too big for Notepad, Windows will ask if you want to use WordPad instead.) When you're ready to incorporate the file into the Registry, simply right-click the .reg file and choose *Merge*. ■

Windows Tips *pays $50 for published tips and questions. Scott Dunn is a contributing editor for* PC World.

WINDOWS TOOLBOX

Mixed-Up Drive Letters? Change Them to Your Liking

IF YOU INSTALL a new disk drive or repartition an old one, you may be less than thrilled with the letters your system assigns to your drives. In Windows NT, Windows 2000, or Windows XP, you can fix the letters with the Disk Administrator utility (NT) or the Disk Management portion of the Computer Management utility (2000, XP). If you're running Windows 95 or 98, you can change letters quickly and simply by using the Letter Assigner freeware utility. You're not likely to need it often, but when you do, you'll be glad it's around. Download Letter Assigner from find.pcworld.com/13902 or from www.v72735.f2s.com/LetAssig (the site of its creator, Vadim Burtyansky).



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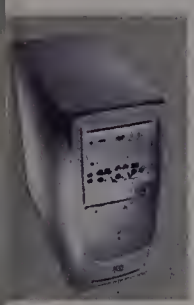

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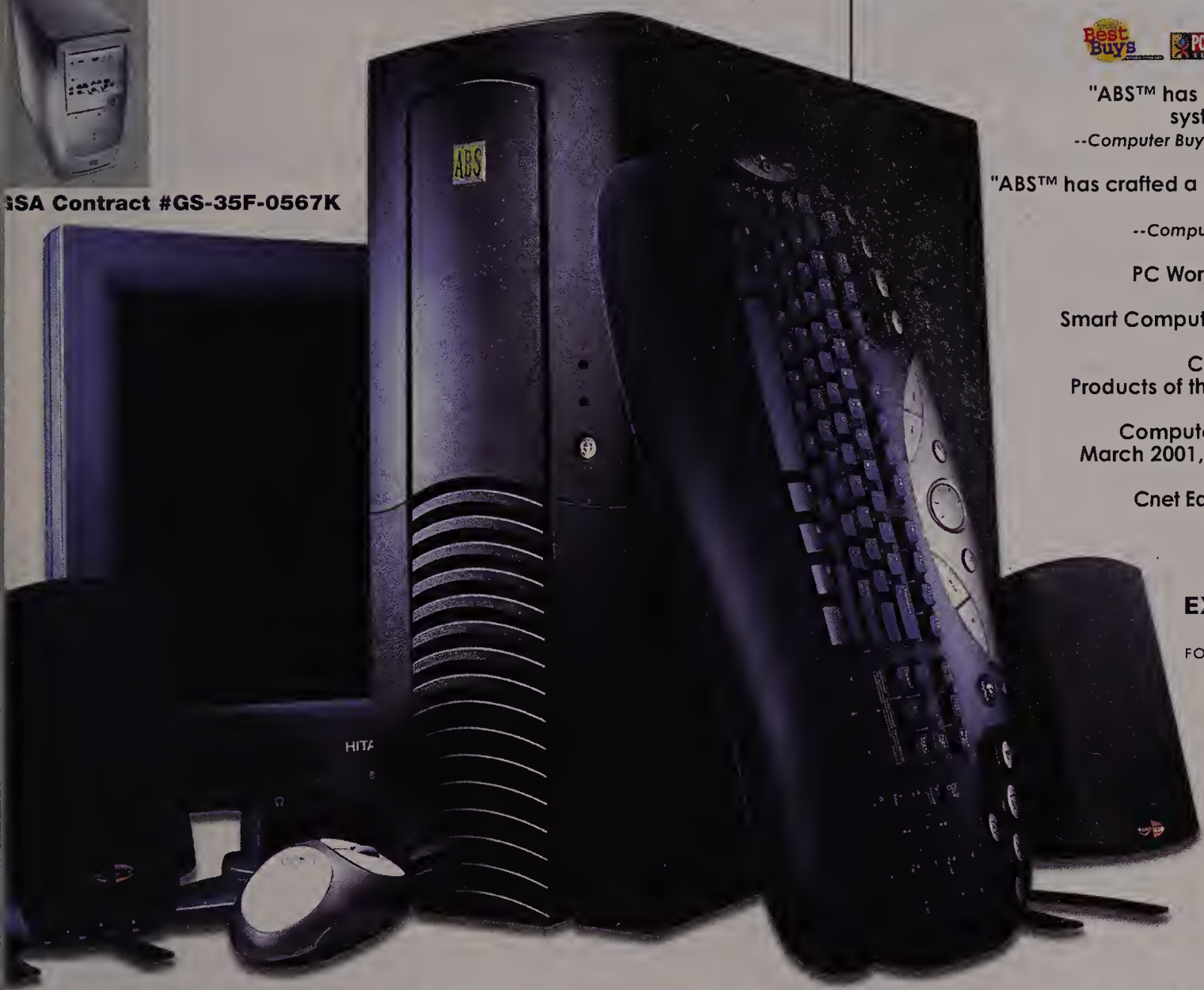

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Internet Time—You Can Set Your Clock by It

HAVE YOU EVER NOTICED that computers make the world's worst clocks? Sure, Windows is able to display the time in every conceivable format, and it switches between standard and daylight saving time without a hitch. But the time that appears on your taskbar probably runs fast or slow by at least a few minutes every week. As this is being written, my PC's clock is fast by 13 minutes, a state of affairs I have lived with for several months because it has fortuitously made me much more punctual.

Of course, you could simply reset your clock manually, but it will only drift noticeably out of whack again in a matter of days. Since e-mail and file time stamps are generated by your computer's clock, keeping your PC on the right time is more important than you might assume. Why not harness the Internet to control your PC clock's accuracy?

The National Institute of Standards and Technology in Boulder, Colorado, maintains an atomic clock at www.time.gov that you can query over the Internet for the official U.S. time. At find.pcworld.com/13903 you'll see a complete list of Internet time servers. Follow these steps to set up Internet time synchronization in various versions of Windows.

Windows XP (Home Edition or Professional): The task is a major cinch—simply right-click the time display on the taskbar, choose *Adjust Date/Time*, click the *Internet Time* tab, and check *Automatically synchronize with an Internet time server.* Choose one of the servers on the drop-down list (NIST's server can be found at time.nist.gov), click *Update Now*, and finally click *OK*. Windows XP will try to synchronize with the time server automatically once a week. If your Internet connection is intermittent, XP will try to sync at regular intervals until it succeeds.

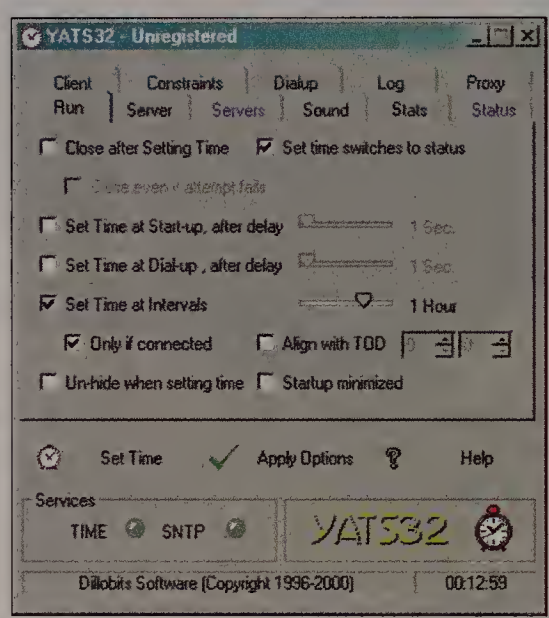

FIGURE 1: SET YOUR PC's clock with Dillobits Software's YATS32 Internet time utility.

Windows 2000: Earlier versions of Windows lack XP's easy time-synchronization interface, but they include the underlying Internet time commands that make synchronization work—if you're comfortable using the command line. If you're command-line averse, you may want to give the YATS32 utility described below a try; it works fine with Windows 2000.

Choose *Start•Programs•Accessories•Command prompt* to open a command prompt window. Then enter **net time /setsntp:*address***, where *address* is the domain name of the time server. For example, the command **net time /setsntp:time.nist.gov** sets NIST's clock as the default time server for the system. To set the time, use the command **net time /set**. To automate this process, simply use the command **at 23:30 /every:Su "net time /set"** (for example), which schedules synchronization to occur every Sunday at 11:30 p.m. You can also use this tip with Windows XP if you prefer to have complete control over where and when you synchronize your clock.

Windows 95/98/Me: All three of these operating systems lack the Internet time-synchronization tools of Windows 2000 and XP (although they do permit syncing with another computer on a local network via the Net time command). Fortunately, there are numerous downloadable utilities available to fill the gap. One is Dillobits Software's $19 YATS32, a 1.55MB shareware program. Go to find.pcworld.com/13905 to download it. YATS32 offers more clock-synchronization options than you'll probably ever need (see **FIGURE 1**). Besides letting you control when and where you set your clock, YATS32 monitors your computer's clock and tells you just how far it drifts each day. Now if only it would tell you why. ▶

BOOKMARK YOUR E-MAIL

I'LL BET THERE HAVE been many times when you've needed to find an important e-mail message quickly. Reader Tushar Teredesai of Willowbrook, Illinois, has discovered that Netscape's Communicator version 4.7*x* allows you to convert messages in Messenger's in-box into Navigator bookmarks. To do this, select the message you want to bookmark, and choose *Communicator•Bookmarks•Add Bookmark* (or *File Bookmark*). Clicking the bookmark opens the e-mail message. Teredesai notes that if you subsequently move the e-mail message to a different folder in Messenger, the bookmark will no longer work. To avoid that problem, move messages out of the in-box and into long-term storage in other folders before bookmarking them.

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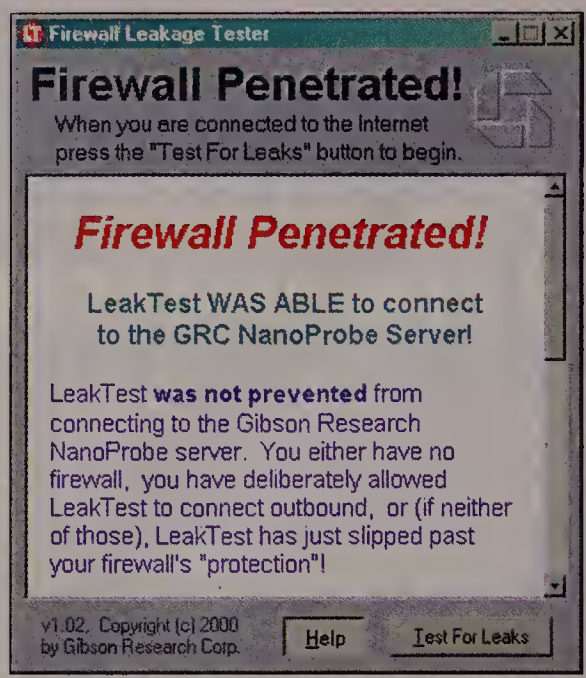

FIGURE 2: GIBSON RESEARCH'S LeakTest checks your firewall's outgoing security.

KEEP TESTING YOUR FIREWALL

BACK WHEN WE all had more hair, the Vapors put out a song called "Turning Japanese," in which vocalist Dave Fenton insisted "I asked the doctor to take your picture, so I can look at you from inside as well." You may be wondering what this has to do with firewalls. Well, back in the April column, I described two online tools that test firewalls, Shields Up and HackerWhacker (find.pcworld.com/13907). Both programs expertly pummel your Internet-connected computer with access requests to see whether any of your connection's ports are vulnerable to attack from the Net. A third testing option is Symantec's new (and free) Security Check site (www.symantec.com/securitycheck).

But firewall breaches don't occur only from the outside in. Having a firewall doesn't guarantee that you won't download and install a virus or Trojan horse that runs *inside* your computer and sends your personal information out to the virus author's system through your PC's connection ports. To test your firewall's outgoing security, you need to use a tool that lets you look from inside as well. Shields Up author Steve Gibson has come up with just such a program. His free LeakTest site (grc.com/lt/leaktest.htm) offers a 27KB utility that you run on your system (see **FIGURE 2**). Browse to find.pcworld.com/13906 to download the utility.

Gibson says that when he first released LeakTest, several personal firewall products failed. Many vendor updates pass muster, but others are vulnerable to Trojan horses or have other quirks that Gibson finds objectionable. At grc.com/lt/scoreboard.htm Gibson has posted tables listing the good, the bad, and the leaky.

SHOCKWAVE STANDS ALONE

IN THE OCTOBER column, I described how to find Shockwave animation files in a PC's browser cache for offline playback (find.pcworld.com/13908). Reader Chad Wright of Elk River, Minnesota, who had originally inquired about the topic, wrote back to ask whether anyone makes a stand-alone Shockwave animation player that doesn't run as a browser plug-in. Macromedia's free, stand-alone Shockwave 8.5 player supports 3D Shockwave animations and includes the latest Flash player (another Macromedia animation format). Head over to find.pcworld.com/13909 to download Shockwave 8.5.

How about some content to go with that player? Macromedia's Shockwave.com site is a good place to start, and Macromedia partner Atomfilms (www.atomfilms.com) has scads of short animations available in Shockwave format. Professional Shockwave designers often showcase their design skills in online galleries of quirky—and sometimes brilliant—animation. The simplest way to locate these is to enter **shockwave gallery** in the search field of your favorite search engine. CleverMedia's Shockwave Arcade (clevermedia.com/arcade) offers a trove of games, and the Shockwave Games Directory (shockwavegames.hypermart.net) lists and rates other Shockwave game servers. Let the animation begin! ■

Send your questions and tips to nettips@spanbauer.com. We pay $50 for published items. Scott Spanbauer is a contributing editor for PC World.

DOWNLOAD OF THE MONTH

Control Your PC Remotely With TridiaVNC

WINDOWS XP COMES with several nifty new capabilities, including a feature called Remote Desktop. If your home, office, and portable PCs run Windows XP Professional (regrettably, the feature isn't available in Windows XP Home Edition), you can connect to the systems remotely, either over a direct dial-up connection or via the Internet, and run applications as if you were sitting in front of them. Neato—except how many of us have two or more computers running Windows XP Professional? Commercial remote-control applications such as Symantec's $180 PC Anywhere and Funk Software's $150 Proxy are feature-rich and compatible with most versions of Windows, but they're expensive.

Tridia's free TridiaVNC remote-control program (available at www.tridiavnc.com) works with Windows 95, 98, Me, NT 4, 2000, and XP, as well as with Red Hat Linux and Sun's Solaris OS. After downloading and installing the 4.7MB program, you can launch either the server or the client portion, depending on the connection you need to start. To configure the server side, create a password and make sure your firewall software allows access to the server. On my system, I clicked *OK* to a couple of warnings my ZoneAlarm Pro firewall popped up. On the client side, enter the domain name or IP address of the remote computer, and you're off.

Now you can troubleshoot mom's computer from afar, and even reboot it when it gets cranky (the computer, not mom). As with any remote-control tool, use caution. Choose a good password, share it only with people you want to let control your PC, and don't leave the server running when you don't need remote access.

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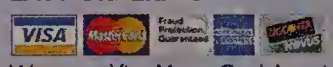

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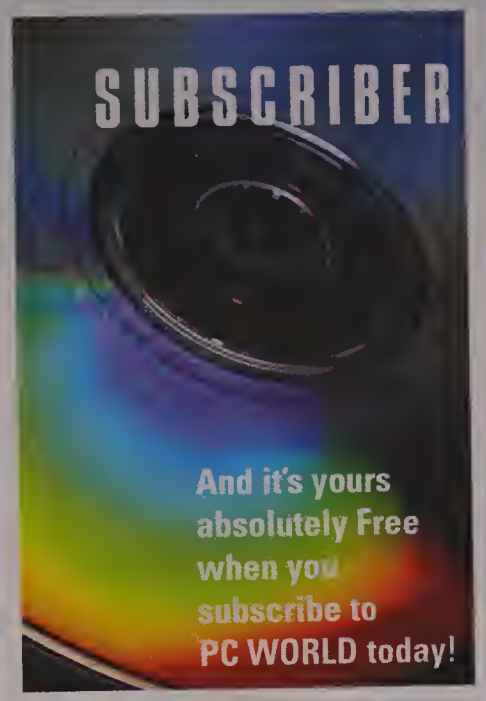

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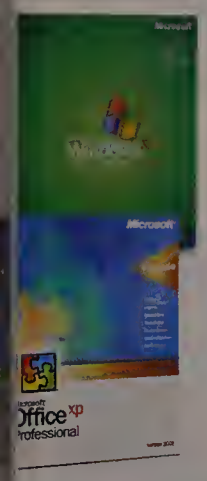

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STEP BY STEP

STAN MIASTKOWSKI

Get a Free Tune-Up for Your Windows PC

IS YOUR PC growing sluggish, acting strangely, or even occasionally locking up? Although these symptoms could indicate a serious problem, it's more likely that a quick Windows tune-up is all you need to return your PC to tip-top health.

There are a legion of add-in utilities available for Windows, and you might have to lay down the bucks (if you haven't done so already) for a comprehensive utility suite such as Norton SystemWorks (www.symantec.com) or Ontrack's SystemSuite 4 (www.ontrack.com) to iron out any thorny problems. In most cases, however, you can get by with Windows' built-in tune-up utilities. Other applications (such as virus checkers) are available for free. If you decide to go with a full-fledged utility suite, point your browser to find.pcworld.com/15700 to check out our review of SystemSuite, SystemWorks, and other popular packages. ■

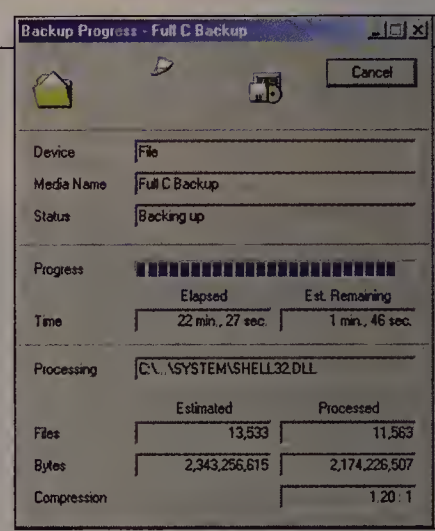
Stan Miastkowski is a PC World *contributing editor.*

1 Scan for viruses. A virus can play havoc with your computer and cause it to behave in truly strange ways. Make sure your PC's antivirus software is up-to-date. Then perform a full-system scan. If your PC does not have an antivirus utility installed, try Trend Micro's HouseCall, a free utility that scans your computer over the Internet (visit housecall.antivirus.com).

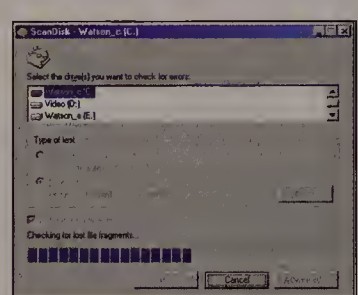
2 Do a backup. Windows includes a basic backup utility. (It won't, however, back up to CD-Recordable discs.) To access Backup, select *Start•Programs•Accessories•System Tools•Backup* and follow the directions. (If you don't see Backup in System Tools, you need to install it: Open *Start•Settings•Control Panel•Add/Remove Programs*, select the *Windows Setup* tab, double-click *System Tools* in the Components list, check *Backup*, and click *OK* twice; from there, follow the directions.)

If you don't want a full backup, at least back up your Windows Registry. Copy System.dat and User.dat (which are tucked away in the \Windows directory). Windows Me users also must copy Classes.dat.

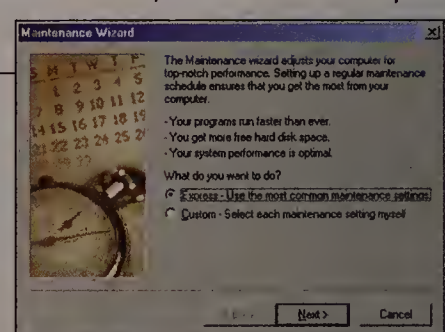
You'll need to change Windows Explorer's properties to view these hidden files. From Explorer, select *View•Folder Options* (or *View•Options* or *Tools•Folder Options*, in some versions of Windows), click the *View* tab, and choose *Show all files* or *Show Hidden Files and Folders*.



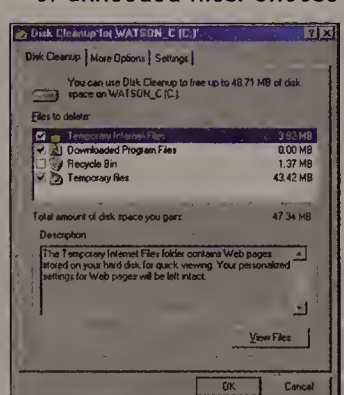
3 Scan your disks. Windows' ScanDisk analyzes your hard drives for errors and problems. Select *Start•Programs•Accessories•System Tools•ScanDisk*, select a drive, click the *Thorough* option, and check *Automatically fix errors*. Then click *Start*. Repeat for each drive.



4 Defragment your drives. Your hard drive saves files wherever it has free space—not necessarily in one place. A drive can work dramatically faster when it doesn't have to jitterbug all over the disk gathering pieces of files. Disk Defragmenter makes each file contiguous. Select *Start•Programs•Accessories•System Tools•Disk Defragmenter*, select a drive, and click *Start*. Repeat for each of your drives.



5 Sweep out unneeded files. Normal PC use, especially Internet browsing, can fill your hard drive with hundreds of unneeded files. Choose *Start•Programs•Accessories•System Tools•Disk Cleanup*, choose a drive, select *OK*, and you'll see a list of various files that you can delete. Check the file types you want to remove (Windows provides an explanation for each) and click *OK*. Repeat for each drive. You'll find additional choices under the *More Options* tab.



6 Automate your tune-up. Now that you've performed individual tune-up chores, you can automate the process. Select *Start•Programs•Accessories•System Tools•Maintenance Wizard* and follow the directions.

7 Set System Restore points (Windows Me only). Windows Me saves critical settings that you can restore if your PC runs into problems. You can also manually set restore points—a good idea when installing new software or hardware. Select *Start•Programs•Accessories•System Tools•System Restore*, click *Set a Restore Point*, select *Next*, enter a description, and click *Next* again.

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HARDWARE TIPS

KIRK STEERS

KEEP AN EYE ON WINDOWS' MEMORY | THE SAFE WAY TO REMOVE PC CARDS | RESET DVD REGIONAL CODES

Jog Your Memory for Faster PC Performance

NOT SO LONG AGO, having 64MB of RAM on your PC was considered a luxurious excess. Today, it's the bare minimum. Running many programs at once, processing graphics and video, or caching heaps of Web pages—each devours RAM the way TV's Homer Simpson devours donuts at a Krispy Kreme factory.

Insufficient or improperly configured memory can hinder a PC's performance and cause intermittent, hard-to-resolve error messages, or even system crashes. The best way to avoid this, of course, is to add more memory to your system.

RAM prices fluctuate rapidly, but they have trended down in recent years. I recommend upgrading to at least 128MB.

But before you add memory, make the most of your existing RAM. Windows has several settings for optimizing memory performance, as well as tools for finding and fixing memory-related problems.

When your PC runs out of space in standard memory (its RAM chips), it stores overflow data in virtual memory, which is simply a large file—called a swap file—that's located on your hard disk. Data is accessed from a disk slower than it is accessed from standard RAM, so it pays to optimize your swap file's performance.

To view your swap file settings, right-click the *System* icon on your desktop, select *Properties*, and choose *Virtual Memory* under the Performance tab.

SET YOUR SWAP FILE

BY DEFAULT, Windows automatically adjusts your swap file's size to meet its needs. A nearly full hard disk squeezes your swap file, and this can lead to sluggish performance or sometimes a system crash. So always have at least 100MB of disk space put aside for your swap file.

To set the size of the swap file manually, choose *Let me specify my own virtual memory settings* in the Virtual Memory dialog box (see **FIGURE 1**). Select a minimum size and a maximum size, or enter the same number in both fields to fix the file at a constant size. Freezing the swap file's size may increase system performance because Windows no longer has to adjust the file size, but it also increases your PC's risk of running out of memory.

If you have more than one hard disk, place the swap file on the one with the fastest access time. Do so by changing the value in the 'Hard disk' field of the Virtual Memory dialog box and then rebooting.

Defragmenting your hard disk can improve its performance as well. Over time, files get stored on a drive in pieces that may become scattered around the hard disk. A defragmentation utility rearranges the data on the disk to store each file in a single, contiguous block. Applications can access a file that has its pieces stored in close physical proximity on your drive much more quickly than they can access a file with scattered pieces.

To run Windows' Disk Defragmenter utility, select *Start•Accessories•System Tools*. Unfortunately, that won't defragment the swap file because Windows considers it fixed data that can't be moved. To overcome this hindrance, make the swap file as small as possible before you defragment by restarting your system and closing all apps that launch on start-up.

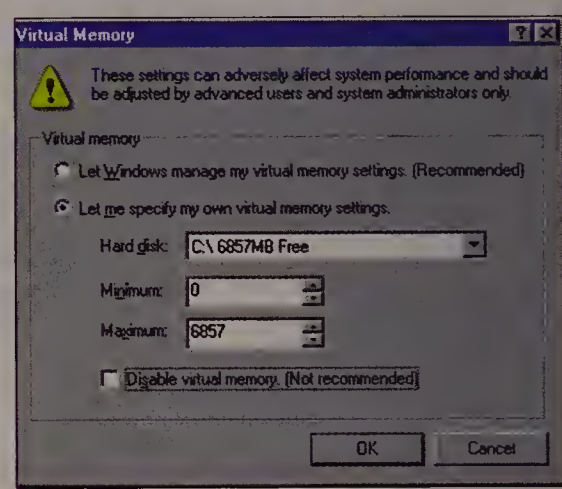

FIGURE 1: OPTIMIZE YOUR VIRTUAL memory to enhance your PC's performance.

If you have enough physical RAM installed, you may be able to remove the whole swap file temporarily, defragment the disk, and then replace the swap file. Make sure your system has sufficient RAM to run Disk Defragmenter, however. If your system runs out of RAM and has no swap file, it may crash. See "Mind Your Memory" below for instructions on how to check your available memory.

To remove the file, check *Disable virtual memory* in the Virtual Memory dialog box and reboot. To reenable it, uncheck *Disable virtual memory* and reboot.

MIND YOUR MEMORY

WORRIED ABOUT running out of memory? To avoid system crashes, keep an eye on how much free memory you have left.

Windows' System Monitor utility ▶

PC CARDS UNPLUGGED

NOTEBOOK USERS ARE frequently on the go and in a hurry. If you use a PC Card to attach a device to your laptop, don't remove it too quickly when quitting; Windows may still be downloading e-mail to the device, for example, or it may be otherwise using the card. To remove such devices safely, open the PC Card's Socket Status dialog box by clicking the *PC Card* icon in the system tray. Select the PC Card that you want to remove, and click *Stop*. In a few seconds, Windows will tell you that it's safe to proceed.

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shows the level of unused memory Windows has at any given time, along with several other useful performance statistics. To run the utility, choose *Start•Programs•Accessories•System Tools•System Monitor* (or install it from your Windows CD via the Add/Remove Programs applet in Control Panel). System Monitor displays such real-time statistics as swap file in use, swap file size, and unused physical memory (see **FIGURE 2**).

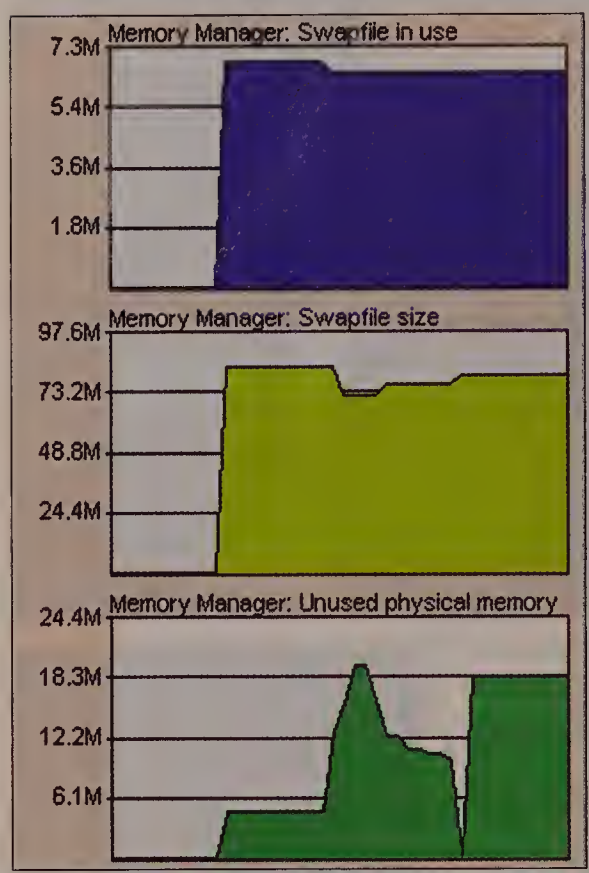
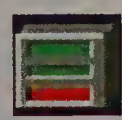


FIGURE 2: SYSTEM MONITOR'S memory stats help you find the cause of resource dips.

Select *Edit•Add Item•Memory Manager* to choose the memory statistics you want System Monitor to display. Unused physical memory, swap file size, and swap file in use can help you estimate which programs have the biggest appetite for RAM. But there's a way to get a more accurate measure of how much RAM a given program requires. First, determine the amount of memory all your running programs are using by adding the values for 'Other memory' and 'Swappable memory' in System Monitor. Then subtract the value of 'Disk cache'. Now close a program and repeat the same steps. The difference is the amount of RAM used by the program you just closed.

Windows' System Resource Monitor is another excellent diagnostic tool for keeping track of your PC's memory usage. 'System resources' is a 128KB area of memory that current versions of Windows use for compatibility with older apps; if it runs out, Windows displays an 'out of memory' error message, even though you may have plenty of free physical or virtual memory on hand. Resource Monitor places a Resource Meter icon in your system tray. Place your mouse over the icon to see the percentage of Windows' free resources that are available for use, or double-click it to see the amount of available memory as a larger graphic.



If your resources drop below 25 percent, be wary about opening new files and applications. If they drop below 10 percent, you'll see a low-memory warning on your screen. At that point, you're heading toward a system crash. Save your work immediately and close all unnecessary applications and files.

CHECK FOR MEMORY LEAKS

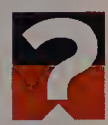
HAVING TOO MANY applications or big files open isn't the only reason for low memory. Sometimes poorly written software programs don't release blocks of memory when they're finished using them. Such 'memory leaks' add up quickly and can tie up your RAM and/or your system resources.

You can spot these leaks by monitoring RAM use with the System Monitor and Resource Monitor. Watch for programs that don't return memory to their original levels when you close them. Also, keep an eye on the 'Threads' listing in System Monitor. (To view it, choose *Edit•Add Item•Kernel•Threads.*) Software operations are broken into threads that your PC's hardware performs. If the number of threads continually increases—especially over the course of minimal computing activity—you've probably sprung a leak.

Unfortunately, leaky software isn't uncommon. If you suspect that a program is leaking memory, check the vendor's Web site for a fix.

You can also recover RAM lost to leaks and unused DLLs with a handy utility called RAMrocket. It was just released at press time so we didn't get a chance to test it thoroughly, but it looks promising. Try it out for yourself: Visit find.pcworld.com/14820 for a 14-day trial version available exclusively to *PC World* readers.

WILL IT PLAY IN PEORIA?



I BOUGHT MY PC a year ago, and the DVD drive worked fine until I tried to play a DVD movie sent to me by a friend who lives in Britain. I've been told that DVD movies are restricted to geographic regions, and that I have to reset my DVD drive to accept DVDs from Britain, but I can't find any documentation on how to do this. Can you help?

David Busch, Yonkers, New York

YOU CAN PROBABLY get your friend's DVD to play on your system, but doing so may require considerable effort. DVD players and DVD movie discs are set with a regional code for copy protection and distribution control. The code is intended to prevent a DVD player sold in one region of the world from playing a DVD disc sold in a different region.

Look on the DVD for a small globe with a number in it. The number for the European region is 2, and the number for the United States and Canada is 1. If it says 'ALL', the DVD is playable in any region.

On many DVD drives you can select the region code, but it's not easy; you'll probably have to reinstall your drive. Check with the manufacturer.

Most drives let you select the region code at installation. This may be as easy as deleting the DVD drive in Device Manager, rebooting, and reinstalling the driver, but there's a catch: Most drives let you reset the region only a handful of times—typically from five to nine resets. If you need to change regions after the drive has reached its maximum number of resets, you'll have to return it to the manufacturer for service.

A number of hacks are available on the Internet for disabling the regional code in a DVD player's firmware, but be warned: Using one of these will likely invalidate your DVD player's warranty. ■

Hardware Tips *welcomes your tips and questions and pays $50 for published items. Kirk Steers is a* PC World *contributing editor.*

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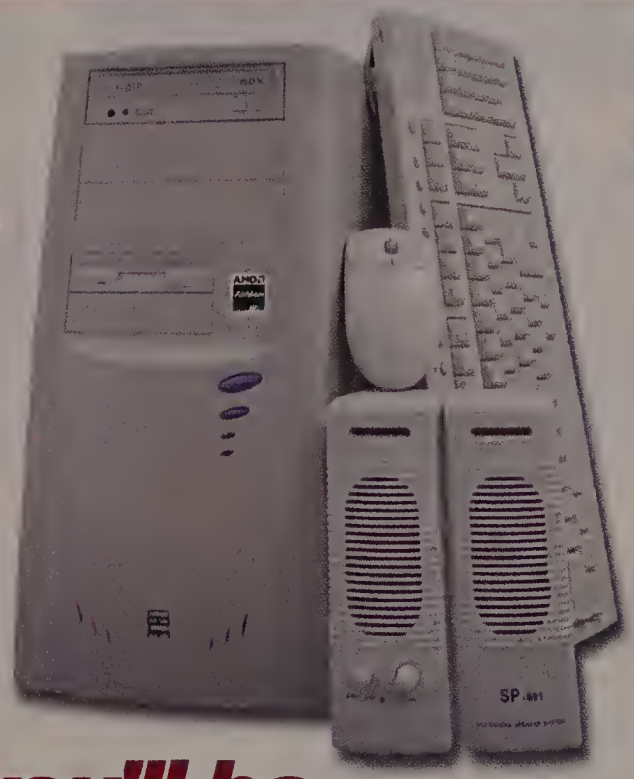

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ANSWER LINE

LINCOLN SPECTOR

Rescue Files Trapped on a CD-RW Gone Bad

I HAD TO ABORT copying a file to a CD-RW disc recently (using Adaptec's DirectCD 3). I'd transferred several important files to the disc before the copy interruption occurred, and now they're gone. Is there any way to retrieve my data?

Heidi Meiswinkel, Itasca, Illinois

THE DATA IS PROBABLY still somewhere on your disc. The trick is finding it.

First, three points of caution: Don't write additional data to the problem disc until you've successfully retrieved the files. Also, CD-RWs are too unstable for long-term storage of important files, so use CD-R discs for that purpose. Finally, never keep only one copy of an important file, no matter what media it's stored on.

So much for the lecture. Now let's get to work restoring those files.

DirectCD's ScanDisc utility (not to be confused with Windows' own ScanDisk) diagnoses and fixes bad CD-R and CD-RW discs. In DirectCD 3, you launch ScanDisc by selecting *Start•Programs•Adaptec DirectCD•ScanDisc* (your path may vary). This version of ScanDisc does not closely examine the entire disc, however, so don't expect miracles.

The ScanDisc version that comes with DirectCD 5 does a much better job, but to acquire it you must buy and install Easy CD Creator 5, which contains DirectCD 5. Roxio (www.roxio.com) lists Easy CD Creator at $99, though I've seen it for as low as $69. To launch ScanDisc in DirectCD 5, double-click the *DirectCD* icon in your system tray and select *CD Utilities*.

If you're happy with your current version of DirectCD and you just need a better version of ScanDisc, consider CD-ROM Productions' $50 CD-R Diagnostic utility (see **FIGURE 1**). Instead of trying to restore a damaged disc for reuse (as ScanDisc does), CD-R Diagnostic copies the files to another location. You can visit either find.pcworld.com/12225 or www.cdrom-prod.com to obtain a demo version.

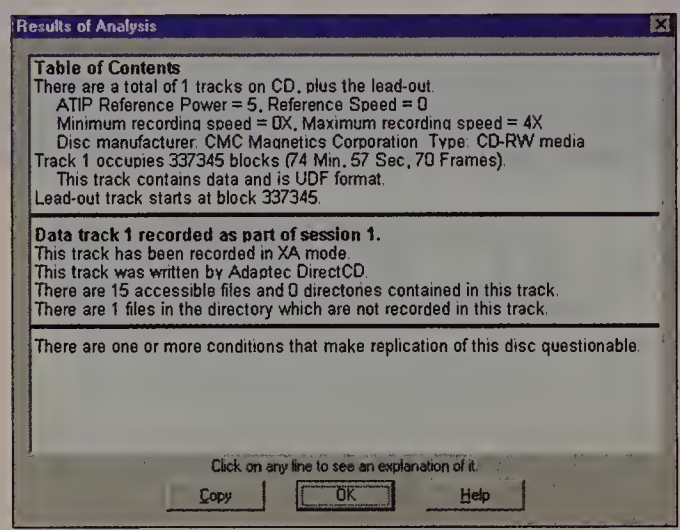

FIGURE 1: THE CD-R DIAGNOSTIC utility pulls off whatever files it can read from a damaged disc.

If the software approach doesn't work, you can send your disc to a data-recovery service. I know of two companies that recover data from CD-R and CD-RW discs, and other companies probably offer similar services. I suggest you try AcoDisc (www.acodisc.com) first, because that company will evaluate your disc free of charge (except for shipping). Ontrack (www.ontrack.com) charges $100 just to look at the disc. Both companies will inspect the disc and tell you whether a restoration is possible before estimating the cost of that operation, which can range from $29 to $1000. Both companies also read, but do not alter, the damaged disc.

Once you've retrieved the needed data, throw the damaged disc away. Don't entrust more files to suspect media. Besides, CD-RW discs wear out over time as data is written and rewritten to them.

PRINT FOLDERS TO A NETWORK PRINTER

YOU'VE TALKED before about printing a list of the files in a folder [see "Print Folder Directories," January 2001 *Answer Line*, find.pcworld.com/13060], but your solution assumed the user has a local printer hooked up to LPT1. What if the person uses a network printer?

Joanne Doolin, Browning, Illinois

HERE'S A WAY to print a folder's contents that will work with your default Windows printer, whether it's local or networked.

First, create a batch file by launching Notepad (select *Start•Programs•Accessories•Notepad*) and entering three lines:

```
@echo off
dir %1 /-p /o:gn > "%temp%\dir.txt"
notepad /p "%temp%\dir.txt"
```

Then save the file as **c:\windows\sendto\printdir.bat** and exit Notepad. From now on, whenever you want to print a folder's contents, all you have to do is right-click the folder and select *Send To•printdir*. ■

Send your questions to answer@pcworld.com. Answer Line *pays $50 for published items. You can find Contributing Editor Lincoln Spector's humorous writing at www.thelinkinspector.com.*

OPEN EXPLORER TO THE RIGHT FOLDER

BART DEHAESE of Veltem, Belgium, asks how to change the folder that Windows Explorer defaults to when you open it from the Start menu. Right-click the *Windows Explorer* icon and select *Properties*. Click the *Shortcut* tab. The target field should contain something like 'C:\WINDOWS\EXPLORER.EXE'. Add **/n, /e, "*path*"** to that, where *path* is your desired default folder. For instance, to have Explorer open to My Documents, you'd use the full command **C:\WINDOWS\EXPLORER.EXE /n, /e, "C:\My Documents"**. Click *OK* to close the dialog box.

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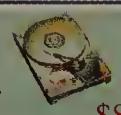

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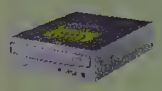

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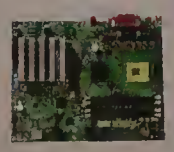

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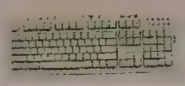

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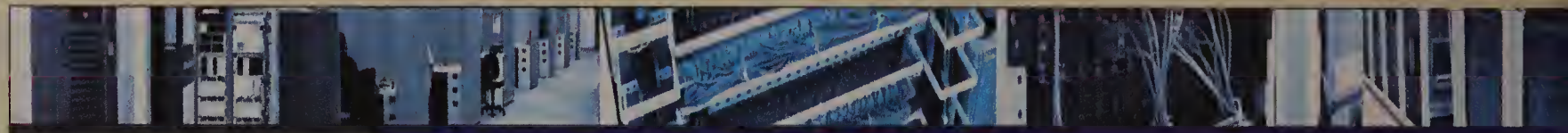

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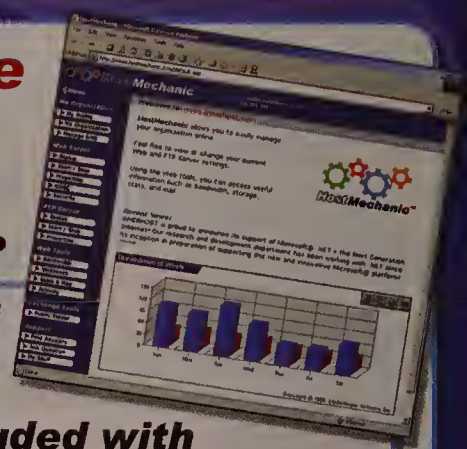

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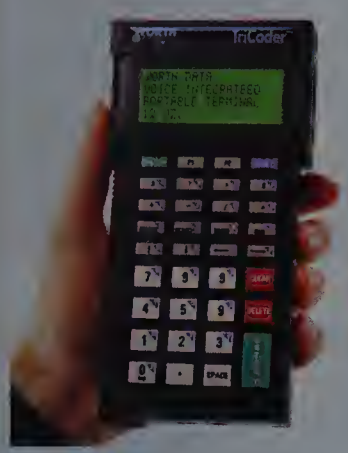

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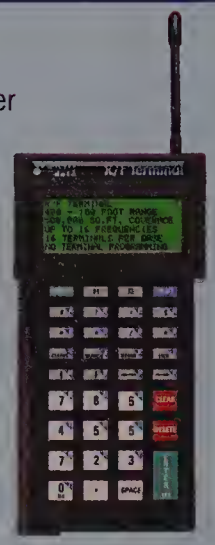

- Scan and key data on-line remote from computer
- Computer sends display and triggers voice messages on Terminal
- All programming on host (VB, C, Access,etc.)
- 1,000 ft. range (500,000 sq. ft.)
- Bar code input by Wand, Laser or CCD
- Base Station – **$845** (up to 16 Terminals)
- Complete Terminal with Wand – **$1215**
- With integrated Laser scanner – **$1790**

RF Scanners

- Cordless on-line scanning
- Transmits up to 100 feet
- No license necessary
- Base attaches as a second keyboard
- Serial attachment also available
- Up to 8 RF Lasers per 2-Way Base
- Complete one-way CCD– **$899**
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- Design and print any format, any size label
- Formats for Sears, K-Mart, Penney's, WalMart, EIA, AIAG, etc.
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- Citizen industrial Thermal Transfer printer for bar code labels
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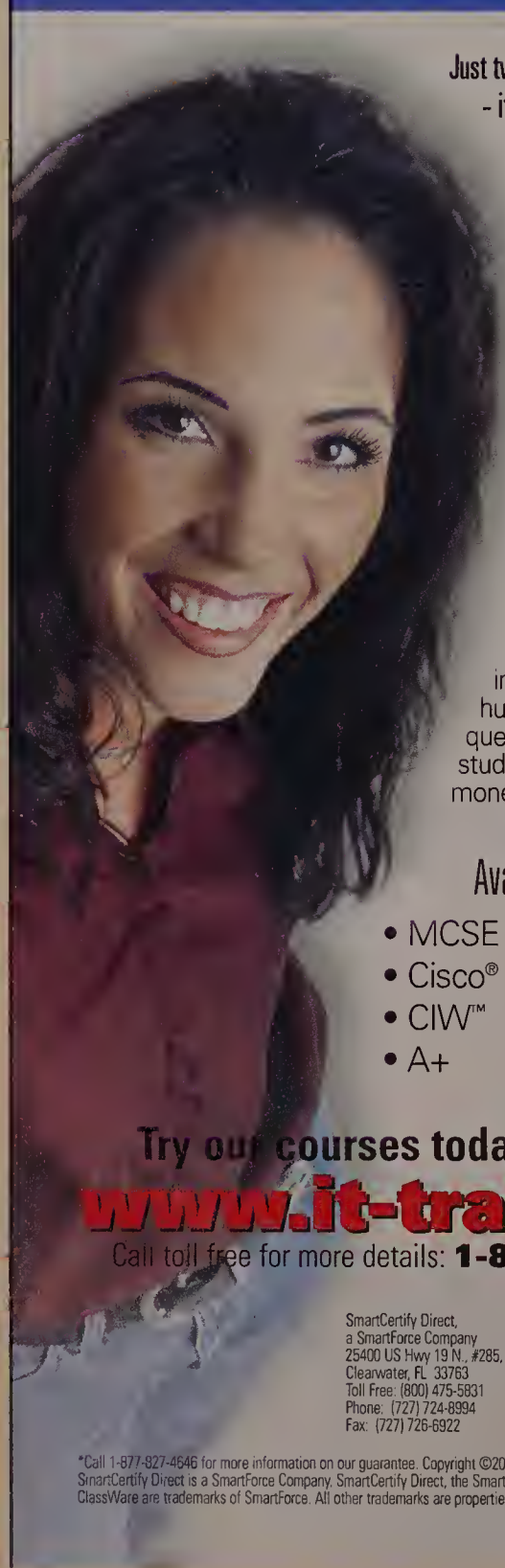

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- 2-3 Fan Bay Coolers w / Brk
- Temp Alarm System

- Ultra SCSI Custom Teflon Cable Available
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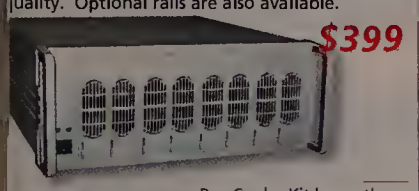
SCSI Vue™ RackMount RAID

Our B Bay Rack Mount Enclosure includes a 300 watt power supply. These cases are commercial quality. Optional rails are also available.

$399



Bay Cooler Kit keeps those HOT Ultra SCSI Drives COLD as ICE!

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HOT SWAP Pull Out Bays Compatible with all S0 pin & 6B pin SCSI Buses up to Fast SCSI 2. From: $79

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- Models for all SCSI types
- Fixes SCSI Cable Problems
- Doubles Cable Length (up to 18')

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SCSI Vue™ Gold Diagnostic Cables

Benefits:
- No Loss Of Important Data
- Faster Performance
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- Large Ferrite Filters
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From: $39

Gold VHD Ultra160 SCSI Cable

From: $109

Features:
- New .8mm Ultra 160 LVD SCSI Connector
- Triple Shielding (Unique Design)
- Double Gold 20u" Plated Connectors
- Diagnostic Indicators • Large Ferrite Filters

LVD-TPO Teflon® Internal Cables

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Benefits:
- Less Errors, Ultimate Performance
- Silver Wire Improves Signal Quality

From: $39

Features:
- Perfect 90 or [illegible] Impedance • Custom in 1 Day
- Triple Pr[illegible] Connector - Gold contacts Silver Wire

50 Pin Replacement Cable for External Drive Cases.

50 Pin Replacement Cable for External Drive Cases.

TEFLON TPO

FireVue™ FireWire RAID systems

offer up to 480 gigabytes of storage. Using the second generation of FireWire. We are now able to get a true 40MB/s data transfer rate; 3 Times faster than the competition!

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480 Gigabyte $3995 Kit
8 Hot-Swap Bays
8 - Bay Tower holds 480 Gigabytes of Hot-Swappable Drives. Bays incorporate exclusive Blue Neon Light.

4 Bay Tower

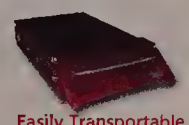
240 Gigabyte $1995 Kit
4 Hot-Swap Bays
4 - Bay Tower holds 240 Gigabytes of Hot-Swappable Drives. Bays incorporate exclusive Blue Neon Light.

2 Bay Tower

120 Gigabyte $995 Kit
2 Hot-Swap Bays
2 - Bay Tower holds 120 Gigabytes of Hot-Swappable Drives. Bays incorporate exclusive Blue Neon Light.

Blue Neon glow strip in every bay shows that drive is powered properly.

Our Hot-Swappable RAID Systems offer quick and easy bay interchangability and complete fault tolerance. Each Hot-Swap Bay includes 2 fans and our exclusive Blue Neon Light. Systems can be custom configured to your specific needs. Our RAID Systems use standard IDE ATA100 Drives offering low cost and high reliability. Each system uses Maxtor DiamondMax 60 Gigabyte 7200rpm drives with three year warranties.



Easily Transportable

FireVue™ FireWire 1394 Adapters

4-4 Pin - Connects 2 Cables
6-6 Pin - Connects 2 Cables
4-6 Pin - Converts 6p Cable
6-4 Pin - Converts 4p Cable

$19.95

These Firewire 1394 Gender Changer and Cable Extenders allow you to use your current cables to extend or change your connector ends. Combined with the added versatility that these devices offer is the ability to also monitor 1394 power. Exclusive LED circuit tells that power is being supplied to the 1394 bus.

FireVue™ FireWire 1394 6 Port HUB

These Firewire 1394 HUB / Repeater allow you to connect up to 6 devices. They can also be wired together to offer unlimited capabilities. Power Supply guarantees proper operation of many devices at the same time and rejuvenates the lines.

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Power Source Included

FireVue™ FireWire 1394 to Cardbus

The perfect solution for any PCMCIA Laptop or Portable computer. This card is both Mac and PC compatible. Gives you two 1394 6-pin Firewire connectors. Supports up to 400Mb speed.

$99

Optional Power Supply

1394

FireVue™ FireWire 1394 to PCI Host

$99

Gives you four 1394 6-pin Firewire connectors. IEEE Standard compliant with auxiliary power connector on card. Supports up to 400Mb speed. Works with Mac OS B.6 or newer, just plug it in. Also supports Windows 98SE, 2000, and 2000 Server.

FireVue™ Gold FireWire 1394 Cables

From: $29

RAID Cables

Diagnostic LED monitors power on the Firewire cable. Gold Connectors, Ferrite Beads, and perfect cable characteristics. Lengths up to 32', both 4 and 6 pins.

Our 32' 6 pin to 6 pin Cable is a Granite exclusive. These cables go longer because they are made better! 2 x Specification.

FireVue™ FireWire 6" Patch Cables

LED shows that power is being supplied $19.95

6" Patch Cable connects External Cases or Internal Drives in Raid Cases. Large Ferrite Bead protect cable from static and noise interference.

FireVue™ FireWire Case Kits

Simply add your IDE drive to our case and you have an instant FireWire Drive. Two models, 3.5" and 5.25". Supports Hard Drives, CD-Roms, tape, and a variety of other devices.

$159

FireVue™ FireWire Hot-Swap Bay

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The Hot-Swap FireWire Bays fit all standard 5 1/4" openings. Can be used in any standard enclosureor computer opening. Comes with Neon glow bar indicator, U[illegible] fast 40 MB/s second generation speed, and two cooling fans.

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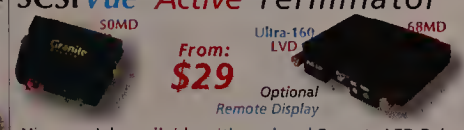

50MD

From: $29

Ultra-160 LVD

68MD

Optional Remote Display

Nine models available with optional Remote LED Pak. These are the finest terminators available, they fix SCSI problems and improve reliability.

Benefits:
- Improves SCSI Bus Performance
- Less Errors; More Reliable Data Transfer
- Diagnoses Problems • Analyzes Signal Quality

Features:
- Active Regulation • Fast 50 & Fast Wide 68
- Status Indicators • Gold Contacts

Gold Diagnostic Adapters

- Both 50 pin and 68 pin (all combinations)

From: $39

50C

Gender Changer

Drive Bus Changer (run 68 pin on 50 pin bus

- 68 Pin Drive to 50 Pin IDC (runs wide drive as narrow)
- 80 Pin SCA Drive to 68 Pin (converts SCA to 68 SE or LVD)

Ultra-160

For Adaptec Ultra Wide Cards
- Adapters with partial termination built in for 68 to 50 converters (converts Host Adapter)

68 Pin to 50 Pin Centronics or 50 Pin MicroD Adapters

$49 Hot Swap Terminator

50C

Now you can safely remove any SCSI device from a SCSI chain by simply clicking a switch. Optional Power Supply provides term. power.

SCSI Cable Tester - LED Readout

Three models to choose:
- 50 IDC
- 50 Cen
- 68 MD

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FireVue™ FireWire Hot-Swaps

$199 Hot-Swap Case Kit

Additional BAYS $29.95

FireVue™ FireWire Hot-Swap Case Kits offer versatility and low cost transportable data storage. You simply buy the kit and as many extra bays to hold all the storage you need. Perfect for video production jobs, just dedicate a drive and bay for every job. With the low cost of IDE storage this system is one of the most cost effective "on-line" storage systems available.

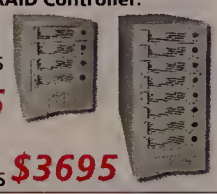
IDE Vue™ IDE RAID Systems

120 Gigabyte 2 Hot-Swap Bays

Kit Includes:
- Hot-Swap Case, 2 Bays, with 65 watt power supply.
- Two Hot-Swap Bays with fans
- Two 36" Teflon Cables
- Two Maxtor 60 Gigabyte 5400 rpm ATA 100 IDE Drives
- One 2 Port Escalade™ PCI RAID Controller.

$955 Kit

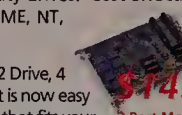
240 Gigabyte 4 Hot-Swap Bays $1895



480 Gigabyte 8 Hot-Swap Bays $3695

IDE Vue™ ATA 100 RAID PCI Host

Speeds up to 100MB/s! 1/2 of a Terabyte with today's new larger capacity drives. Cost effective and fast. Linux, Win 98, ME, NT,



$145 2 Port Model

Offered in three packages, 2 Drive, 4 Drive, and 8 Drive models, it is now easy to configure a RAID System that fits your needs. Using the exclusive TwinStor™ and DiskSwitch™ technologies, Escalade supports RAID 0, RAID 1, and RAID 10.

It also allows for both HOT-SWAP and HOT SPARE support. These exclusive technologies create an environment that provides both data security and blistering fast speeds.

$245 4 Port Model

Raid 0, 1, 10, Hot-Swap Hot-Spare Support

$445 8 Port Model

IDE Vue™ ATA 100 TPO Cables

Ultra 66/100 TPO Cables use 80 conductor cable and special 40 pin connectors. The best you can buy for internal or external use.

From: $29.95

IDE Vue™ ATA 100 Teflon Cables

Ultra 66/100 Teflon Cables use 80 conductor cable and special 40 pin connectors. These are designed for RAID applications or where additional shielding and protection is required.

From: $29.95

Up to 36" Long! (double the specification length)

IDE Vue™ ATA 100 Hot Swap Bay

Fan

Key Lock

The IDE Ultra100 Hot Swap Bay works with hard drives and removable drives. Includes cooling fan, key lock, and 96 pin high reliability interconnection. LED indicators for Power and HDD Activity.

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ICEBox™ IDE Hot Swap Bay $49

The Ultimate ATA 100 Hot Swap Bay, dual fan with ICE Cold temp. Blue Neon fan indicators, key lock.

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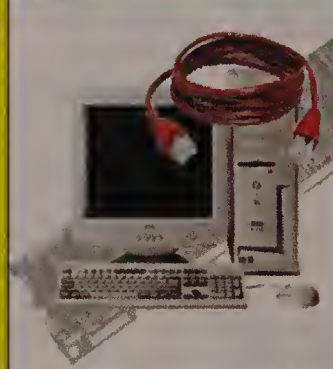

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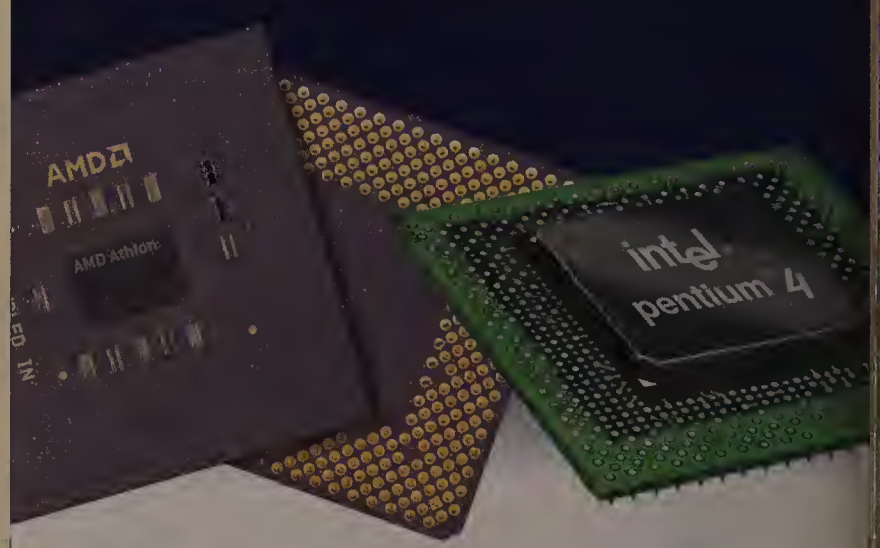

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STEPHEN MANES

How 2001's Bad Ideas Saved You Money

I HATED THE MOVIE *2001*, but the actual year is turning out even worse. Still, I like to look on the bright side: All sorts of stupid concepts we were supposed to spend good money on are now moribund or just plain dead. In this bum economy, it's a cheap form of entertainment just to think about all the money you've saved by passing up innovations such as these:

Internet appliances: This was supposed to be the year manufacturers were finally going to make cheap, easy, instant-on Internet appliances a mass-market miracle. The reality is, nobody wanted to buy them. 3Com's Audrey and Sony's E Villa were only the most prominent of several lame models that were quickly yanked from store shelves.

Internet gizmos: Somebody at Sony must have thought people would clamor for the EMarker, a gadget with a single button you were to press when you heard an interesting but unidentifiable song on the radio. All you had to do after that was take the device home, plug it into one of your computer's USB ports, and launch some software to discover which tune you were hearing—provided that the radio station on which you'd heard it happened to support Sony's service. It would have been faster to call the station and hum. The EMarker flopped.

So did the amazingly moronic CueCat. The premise was that, upon seeing an article or ad that whetted your interest, you would shlep the magazine to your PC and scan a bar code with the device to reach a related Web site. The technology was even supposed to work with specially encoded TV shows. When publishers and broadcasters pulled out, millions of CueCats became depressing paperweights.

The crummy economy spells trouble for dumb technology products.

Connected homes: Did my new refrigerator come with an Internet connection and LCD screen like those on the display models I've been seeing at demonstrations the past couple of years? Are you kidding? It doesn't even have a bar-code scanner designed to reorder my favorite foods via the Web whenever I run out. Maybe that's because appliance makers realized that fruits and veggies don't have bar codes. Or maybe it's because most of the major online grocers have gone kaput.

Remember the hype about home appliances that were supposed to talk to one another via the Sun-backed Jini protocol or Microsoft's Universal Plug and Play? So far, I haven't seen one, though Windows XP supports the latter protocol. Apparently blenders and dishwashers don't have that much to say to each other.

The wireless Web: This big idea was supposed to turn up on every cell phone in the universe and usher in a new era of mobile connectivity. Turns out that it's good mostly for stock quotes and baseball scores. And the high-speed, always-on, packet-based third-generation cellular data services we were all supposed to be using by now are just crawling into existence, slower and less pervasive than originally contemplated. And those cellular services won't come cheap, either, with users likely to pay for every byte that they transmit or receive. It's not exactly the scenario that led to the widespread adoption of the wired Internet—nor one that will make people want to watch movies on their wireless phones.

In times of economic downturn, people rethink what they need in their lives. Keeping up with the latest in technology no longer seems as important as keeping a few bucks in the bank. And making do with a two-year-old PC that hasn't gotten any slower seems like plain common sense. For a while, this economy's only growth market may be pirated MP3s. ■

Contributing Editor Stephen Manes, a cohost of the public television series Digital Duo, *has written about PCs for nearly two decades.*

ILLUSTRATION: JOHN CUNEO

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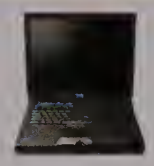

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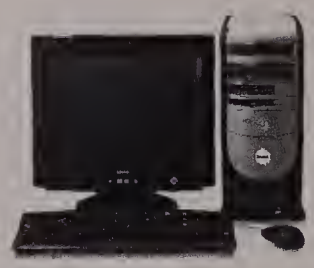

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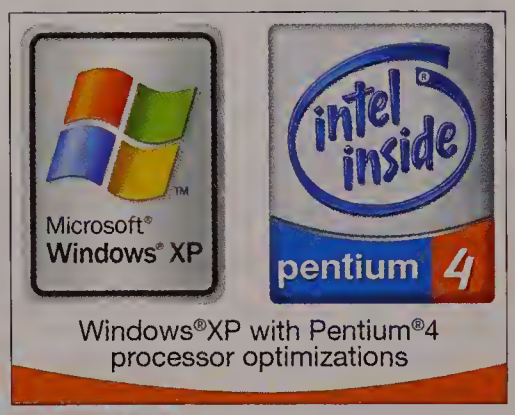

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